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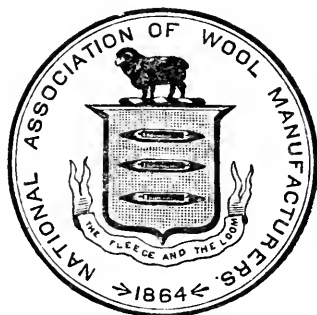


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BULLETIN
OF THE
National Association
OF
WOOL MANUFACTURERS,
1917.

FOUNDED NOV. 30, 1864.

EDITED BY WINTHROP L. MARVIN, *Secretary.*



VOLUME XLVII.

BOSTON, MASS.
1917.

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THE ROCKWELL AND CHURCHILL PRESS
BOSTON

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BULLETIN

OF THE

National Association of Wool Manufacturers

A QUARTERLY MAGAZINE

DEVOTED TO THE INTERESTS OF THE NATIONAL WOOL INDUSTRY.

VOL. XLVII.]

BOSTON, JANUARY, 1917.

[No. I.]

ANNUAL WOOL REVIEW

FOR 1916

WITH ESTIMATE OF DOMESTIC WOOL PRODUCTION
AND OTHER STATISTICAL RECORDS.

IN the following pages we present for the twenty-eighth consecutive year our Annual Wool Review. Continuance of the great war in Europe has had a vital influence upon the wool growing and wool manufacturing industry of the United States. On the one hand, the war has reduced the excessive importation of wool manufactures, which a radical reduction in the tariff rates, through the Simmons-Underwood law of 1913, had made possible, and only the normal amount of European cloths, dress goods, etc., is now being received in this country; so that again for another year the war, so far as the manufacture is concerned, has had the actual effect of an adequate protective tariff, but the revenue that might have been derived from the duties on imports, has been lost to the Government.

On the other hand, a world-shortage of raw wool, due to long-arrested production and the abnormal demands of the contending armies, has led to unprecedentedly high prices for the materials of manufacturing, and has caused the British government to impose an embargo upon the export of wool from the United Kingdom and the East Indian and Australian colonies. This embargo, of course, has had the result of enhancing still further the general price level of wool to American manufacturers. The

year has witnessed an active, buoyant market. The wool manufacturing machinery of America has been even more fully and constantly employed than in the year preceding, one factor of this being what never had existed before the war—a substantial export trade to South America and to Canada.

Under all these circumstances, the growing of sheep for wool and also for mutton has aroused a markedly increased interest throughout the nation. The subject has been systematically taken up by trade and governmental bodies, and Congress has before it several projects for the establishment of experimental sheep farms in the far Western country, where the best information can be made available by government experts as to the breeding of sheep and their care. It is regarded as a danger to this country that it should be so dependent as it is now upon foreign sources of supply for more than one-half of the wool required for American manufacturing.

Wool values have steadily advanced throughout the year in all the markets of the world, and generous profits have everywhere been secured by wool producers. Difficulty in obtaining Australasian wools has brought South American wools to the forefront, America and Europe eagerly bidding against each other. At the present writing it would appear that a certain limited supply of Australian wool would be made available by the British government, which has taken over the entire Australasian clip. The domestic wool yield of the year would have been larger but for the exceptional high price of lamb and mutton, which has been a strong inducement to the growers to send a considerable part of their flocks to market.

General prosperity throughout the United States, consequent upon the huge war order business, has enabled the manufacturers of clothing to dispose of their stocks in quick time at good prices. This has encouraged the principal customers of the woolen mills to place liberal orders for their fabrics, although the activity has been notably greater in carded woolen than in worsted materials. Quarterly canvasses of idle and active machinery by the National Association of Wool Manufacturers show a manufacturing condition of steady improvement through the year 1916. For example, on December 1, 1915, 16.8 per cent of the broad looms and 20.2 per cent of the narrower looms of American woolen mills were unemployed, while on December 1, 1916, this inactive proportion had decreased to 12.8 and 9.4 per cent.

It should be understood that from the very nature of the business some part of the machinery of a woollen mill is likely to happen to be unemployed at some given moment. In every department of the manufacture, however, more machinery was running in the closing month of the year 1916 than in the corresponding period of the year before. This meant, of course, that the consumption of wool was appreciably greater, and rapid inroads were made into the large quantities of wool imported, so that there was no unusual amount of wool on hand in this country at the beginning of the year 1917.

Imports of wool manufactures for the seven months ending with July, 1914 — the period of low Simmons-Underwood duties, before the outbreak of the war — were \$29,239,274, as compared with \$8,870,101 for the corresponding seven months of 1913 under the Aldrich-Payne legislation. But in the seven months ending with July, 1915, imports of wool manufactures were \$11,240,251. For the seven months ending with July, 1916, these imports had fallen still further, to \$9,622,868 — which means, of course, that American mills in the past year were subject to no more severe competition from abroad than they had been under the Dingley and Aldrich-Payne tariffs.

With American woollen mills steadily and fully employed, the wool growers of the country, whose wool all passes into domestic consumption, could not be otherwise than prosperous, even though imports of raw wool have been of record-breaking proportions.

THE NUMBER OF SHEEP.

For the third year the estimate of the wool product of the United States, presented herewith, has been prepared by the Federal Department of Agriculture, which has pursued the plan of basing its calculations on the number of fleeces taken from the sheep rather than on the number of sheep sheared.

As the average weight of fleeces in those States in which double shearing is still practised, notably California and Texas, is considerably reduced while the number of fleeces reported is increased from the figures of our own previous reports, the relative quantity of wool produced is probably not greatly affected. It is to be regretted, however, that the change vitiates to some extent the comparison with former years of the yearly number of sheep

of shearing age, for the fleeces reported will of necessity be somewhat larger than the true number of sheep sheared.

Assuming, however, that the number of sheep sheared and the number of fleeces are the same, the figures show a decrease of 898,000 head, the present number being 35,700,000. Other Department reports, giving the livestock of the country as of January 1 of each year, show a decrease in the number of sheep and lambs of 794,000, from 49,956,000 on January 1, 1915, to 49,162,000 on January 1, 1916. In both cases, however, allowance has to be made for winter losses by disease and exposure, and the slaughter for food during the interval before shearing; allowance also must be made for sheep too young to be shorn, so that the actual discrepancy between these two totals is not so great as it at first appears.

The Department made no estimate of the shrinkage of wool from the grease to the scoured state and therefore we make our own estimate of the shrinkage, which with a statement of the scoured equivalent of the wool product in each State and in the country, and also the value per scoured pound on October 1 in Boston and the total value of the year's clip, is included in the table of production.

The demand for crossbred wools for army purposes has still further increased the strong tendency to breed to mutton sheep not only in this country, but also in South America and Australia. In 1909, 48.25 per cent of all the Australian wool sold in London was crossbred. In 1914 the percentage had increased to 51.67. In 1915-16 the percentage of merinos and crossbreds sold in the Australian and New Zealand markets was 63 for merino against 37 for crossbreds; the previous season's figures were 61 and 39 per cent respectively.

THE WOOL PRODUCT OF 1916.

From the statements set forth in the Table of Production it appears that the total product of sheared wool in this country for the year 1916 was 244,890,000 pounds, and that the total product of pulled wool was 43,600,000 pounds, making an aggregate production of raw wool of 288,490,000 pounds. The average shrinkage of sheared wool in the year 1916 was 59.1 per cent, making the scoured equivalent of this sheared wool 100,235,750 pounds. The average shrinkage of pulled wool, from the brushed to the scoured state, was 30 per cent, making the

WOOL PRODUCT OF THE UNITED STATES. — 1916.

States.	Quality.	Estimate of U. S. Department of Agriculture.			Per cent of Shrinkage.	Equivalent Quantity of Scoured Wool.	Average Value per Scoured Pound, Oct. 1.			Total Value, 1916.	States.
		Number of Fleece.	Average Weight per Fleece.	Wool Product, Raw.			1914.	1915.	1916.		
			<i>Pounds.</i>	<i>Pounds.</i>		<i>Pounds.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>		
Maine	10% fine, 90% medium	130,000	6.5	850,000	41	501,500	48	64	80	\$401,200	Maine.
New Hampshire	5% fine, 95% medium	28,000	6.6	185,000	42	107,300	47	63	78	85,694	New Hampshire.
Vermont	20% " 80% "	78,000	7.4	580,000	48	301,600	47	64	81	244,296	Vermont.
Massachusetts	Medium	18,000	6.9	125,000	42	72,500	45	64	80	58,000	Massachusetts.
Rhode Island	"	5,000	5.0	25,000	41	14,750	45	64	80	11,800	Rhode Island.
Connecticut	"	14,000	5.4	75,000	41	44,250	45	64	80	35,400	Connecticut.
New York	30% fine, 70% medium	530,000	6.7	3,550,000	48	1,946,000	44	64	85	1,654,100	New York.
New Jersey	Medium	16,000	5.0	80,000	41	47,200	44	64	85	40,120	New Jersey.
Pennsylvania	60% fine, 40% medium.	650,000	6.5	4,225,000	51	2,070,250	46	65	87	1,801,118	Pennsylvania.
Delaware	Medium	5,000	6.0	30,000	41	17,700	44	64	80	141,000	Delaware.
Maryland	"	129,000	5.8	750,000	41	442,500	42	64	80	354,000	Maryland.
West Virginia	75% fine, 25% medium	550,000	5.0	2,750,000	49	1,402,500	48	65	87	1,229,175	West Virginia.
Kentucky	Medium	625,000	5.0	3,125,000	38	1,987,500	46	65	80	1,500,000	Kentucky.
Ohio	65% fine, 35% medium	1,950,000	7.0	13,650,000	52	6,552,000	49	67	86	5,634,720	Ohio.
Michigan	25% " 75% "	1,165,000	7.1	8,275,000	49	4,220,250	44	64	85	3,587,213	Michigan.
Indiana	Medium	650,000	6.8	4,420,000	44	2,475,200	44	64	80	1,980,100	Indiana.
Illinois	10% fine, 90% medium	515,000	7.5	3,855,000	47	2,043,150	42	63	81	1,654,352	Illinois.
Wisconsin	5% " 95% "	325,000	7.5	2,437,500	44	1,405,000	43	64	80	1,124,480	Wisconsin.
Minnesota	5% " 95% "	385,000	7.0	2,695,000	48	1,401,400	43	63	78	1,093,092	Minnesota.
Iowa	10% " 90% "	670,000	7.5	4,875,000	48	2,355,000	44	64	80	2,028,000	Iowa.
Missouri	5% " 95% "	680,000	6.8	4,625,000	43	2,636,250	44	63	80	2,109,000	Missouri.
		9,108,000	6.73	61,555,000	47.5	32,174,400				\$26,757,120	
Virginia	Medium	378,000	4.5	1,900,000	38	1,054,000	50	64	81	\$853,740	Virginia.
North Carolina	"	135,000	4.2	570,000	40	342,000	47	73	75	256,500	North Carolina.
South Carolina	"	24,000	4.0	95,000	40	57,000	47	63	75	42,750	South Carolina.
Georgia	"	165,000	3.0	495,000	39	301,950	47	63	76	229,482	Georgia.
Florida	"	111,000	3.1	345,000	40	207,000	46	62	75	155,250	Florida.
Alabama	"	100,000	3.8	350,000	39	213,500	47	62	75	160,225	Alabama.
Mississippi	"	150,000	3.6	540,000	39	329,400	46	62	75	247,050	Mississippi.
Louisiana	"	170,000	3.5	590,000	41	348,100	47	62	75	261,075	Louisiana.
Arkansas	"	85,000	4.1	350,000	41	206,500	46	60	74	152,810	Arkansas.
Tennessee	"	425,000	4.4	1,870,000	39	1,140,700	50	64	78	889,746	Tennessee.
		1,743,000	4.08	7,105,000	40.9	4,200,150				\$3,248,628	
Kansas	Fine, fine med., and medium	185,000	7.2	1,330,000	62	565,400	55	61	86	\$429,590	Kansas.
Nebraska	"	230,000	8.0	1,830,000	61	713,700	55	61	85	606,645	Nebraska.
South Dakota	"	475,000	7.5	3,560,000	61	1,388,400	55	62	83	1,162,372	South Dakota.
North Dakota	"	180,000	7.5	1,350,000	61	526,500	55	62	83	436,995	North Dakota.
Montana	"	3,150,000	7.8	24,570,000	62	9,346,500	57	67	86	8,038,076	Montana.
Wyoming	"	3,675,000	8.4	31,000,000	65	10,850,500	55	66	85	9,222,500	Wyoming.
Idaho	"	1,980,000	7.6	15,000,000	62	5,700,000	56	67	85	4,845,000	Idaho.
Washington	"	555,000	8.6	4,770,000	67	1,567,500	54	66	84	1,316,700	Washington.
Oregon	"	1,760,000	7.5	13,200,000	67	4,556,000	58	66	85	3,702,600	Oregon.
California	33% fall, 67% spring	1,850,000	6.3	11,600,000	64	4,176,000	54	65	83	3,406,080	California.
Nevada	Fine, fine med., and medium	1,340,000	7.5	10,000,000	68	3,200,000	57	67	85	2,730,000	Nevada.
Utah	"	2,080,000	7.2	15,000,000	61	5,850,000	55	64	84	4,914,000	Utah.
Colorado	"	1,400,000	6.0	8,400,000	60	3,300,000	55	64	83	2,788,800	Colorado.
Arizona	"	915,000	6.5	5,950,000	64	2,142,000	56	65	85	1,820,700	Arizona.
New Mexico	"	3,200,000	5.7	18,240,000	66	6,201,000	54	63	83	5,147,328	New Mexico.
Texas	25% fall, 75% spring	1,800,000	5.7	10,250,000	63	3,792,500	56	63	82	4,109,850	Texas.
Oklahoma and Indian Territory	Fine, fine med., and medium	74,000	6.8	500,000	63	185,000	56	63	82	151,700	Oklahoma.
		24,849,000	7.10	176,530,000	63.8	63,861,200				\$54,668,928	
Totals		35,700,000	6.86	244,800,000	59.1	100,295,750	51.8	65.7	84.5	\$84,874,676	Totals.
Pulled Wool				43,000,000	30	30,520,000	46.9	60.5	75.5	23,042,000	Pulled Wool.
Total Product, 1916				288,400,000		130,755,750	50.6 21.1*	64.5 27.2*	82.5 37.4*	\$107,916,676	Total Product, 1916.

* Equivalent value, unwashed.

scoured equivalent of the pulled wool 30,520,000 pounds — so that of the aggregate wool product, including both sheared wool and pulled wool, 288,490,000 pounds, the scoured equivalent was 130,755,750 pounds. The total value of the sheared wool, on the scoured basis and calculated on the value October 1, for the year 1916, was \$84,874,676, and the total value of the pulled wool was \$23,042,000, making the total value of our wool product \$107,916,676.

COMPARED WITH 1915.

The total product of sheared wool in this country for the preceding year, 1915, was 248,777,000 pounds, and the total product of pulled wool was 40,000,000 pounds, making an aggregate production of raw wool for 1915 of 288,777,000 pounds. The average shrinkage of sheared wool in the year 1915 was 58.5 per cent, making the scoured equivalent of the sheared wool 103,187,960 pounds. The average shrinkage of pulled wool, from the brushed to the scoured state, was 28 per cent, making the scoured equivalent of the pulled wool 28,800,000 pounds — so that of the aggregate wool product in 1915, including both sheared wool and pulled wool, of 288,777,000 pounds, the scoured equivalent was 131,987,960 pounds. The total value of the sheared wool for the year 1915 was \$67,771,954, and the total value of the pulled wool was \$17,429,000, making the total value of our wool product for that year \$85,200,954. The aggregate wool product of the United States on the raw wool basis is only 287,000 pounds less in 1916 than in 1915, and on the scoured basis 1,232,390 pounds smaller.

The increase in value of the wool product in 1916 over 1915, amounting to \$22,715,722, is due chiefly to the extraordinary demand created by the war in Europe, supplemented by unusual activity in our own markets.

Following is a brief tabular statement of the wool product figures for the three years 1914, 1915, and 1916:

	1914.	1915.	1916.
Sheared wool.....	247,192,000	248,777,000	244,890,000
Pulled wool	43,000,000	40,000,000	43,600,000
Total raw wool	290,192,000	288,777,000	288,490,000
Scoured equivalent	131,840,680	131,987,960	130,755,750
Value of sheared wool	\$52,218,237	\$67,771,954	\$84,874,676
Value of pulled wool	\$14,513,000	\$17,429,000	\$23,042,000
Total value of wool product.	\$66,731,237	\$85,200,954	\$107,916,676

Pulled Wool.

The United States Department of Agriculture estimates the production of pulled wool for this year at 43,600,000 pounds, which is 3,600,000 pounds more than its estimate for last year. The shrinkage from the brushed to the scoured state, averaging 30 per cent, makes the scoured equivalent 30,520,000 pounds. This quantity may be divided into qualities as follows :

Fine and fine medium 17,520,000 pounds.
Medium and coarse..... 13,000,000 “

These quantities subdivided into the current market grades, with average values based on the price October 1, give the following results :

	Pounds Scoured.	Value per pound, cents.	Total value.
Extra and fine A	5,000,000	85	\$4,250,000
A super	7,000,000	75	5,250,000
B super	6,000,000	70	4,200,000
C and low super.....	1,500,000	57	855,000
Fine combing.....	5,200,000	85	4,420,000
Medium combing.....	3,200,000	75	2,400,000
Low combing	2,100,000	67	1,407,000
Shearlings	520,000	50	260,000
	30,520,000	Average 75.5	\$23,042,000

VALUE OF THE CLIP.

The gross value of the wool product, both fleece and pulled, for the year, based on its scoured value in Boston in the early days of October, is as follows :

Fleece wool.....	\$84,874,676
Pulled wool.....	23,042,000
Total	\$107,916,676

This is an increase of \$22,715,722 over the corresponding value for last year.

In the first group of States, as arranged in the table, the wools were worth \$26,757,120, or 31.5 per cent of the total value of the fleece wool. The second group produced wool to the value

of \$3,248,628, or nearly 4 per cent of the total, while in the third group the value is \$54,868,928, or 64.5 per cent of the whole.

WEIGHT AND SHRINKAGE.

For a series of years the average weight and shrinkage for the whole country has been as follows :

	Average Weight.	Average Shrinkage.
	<i>Pounds.</i>	<i>Per cent.</i>
1901.....	6.33	60.6
1902.....	6.50	60.0
1903.....	6.25	60.8
1904.....	6.50	61.6
1905.....	6.56	61.3
1906.....	6.66	61.8
1907.....	6.60	60.6
1908.....	6.70	60.5
1909.....	6.80	60.9
1910.....	6.70	60.0
1911.....	6.98	60.4
1912.....	6.82	59.3
1913.....	6.95	60.0
1914.....	6.76	59.2
1915.....	6.80	58.5
1916.....	6.86	59.1

The wool came to market this year in good condition, the average yield of clean wool per pound being practically the same as in the other years shown in the above table, and equaling a little more than 40 pounds to the hundred.

The next table presents a statement of the production of wool for a series of twenty-six years with the annual increase or decrease, and the one following it gives the production for the same period reduced to the scoured equivalent, as shown in our yearly estimates.

FLEECE AND PULLED WOOL, WASHED AND IN THE GREASE.

	Product.	Decrease.	Increase.
1891..... pounds	307,401,507	2,073,349	.....
1892..... "	333,018,405	.....	25,606,898
1893..... "	348,538,138	.....	15,519,733
1894..... "	325,210,712	23,327,426	.....
1895..... "	294,296,726	30,913,986	.....
1896..... "	272,474,708	21,822,018	.....
1897..... "	259,153,251	13,321,457	.....
1898..... "	266,720,684	.....	7,567,433
1899..... "	272,191,330	.....	5,470,646
1900..... "	288,636,621	.....	16,445,291
1901..... "	302,502,382	.....	13,865,707
1902..... "	316,341,032	.....	13,838,650
1903..... "	287,450,000	28,891,032	.....
1904..... "	291,783,032	.....	4,333,032
1905..... "	295,488,438	.....	3,705,406
1906..... "	298,715,130	.....	3,426,692
1907..... "	298,294,750	.....	948,176
1908..... "	311,138,321	.....	12,833,571
1909..... "	328,110,749	.....	16,972,428
1910..... "	321,362,750	6,747,999	.....
1911..... "	318,547,900	2,814,800	.....
1912..... "	304,043,400	14,504,500	.....
1913..... "	296,175,300	7,868,100	.....
1914..... "	290,192,000	5,983,300	.....
1915..... "	288,777,000	1,415,000	.....
1916..... "	288,490,000	287,000	.....

Beginning with the year 1914 the estimates are those of the United States Department of Agriculture, which has this year revised its figures for the year 1915, reducing them to 285,726,000 pounds. On this basis the wool product for the year 1916 would show an increase of 2,764,000 pounds instead of a decrease as given in the table. The Department has increased the pulled wool figures over those of a year ago by 3,600,000 pounds. Its revised figures make the fleece wool product for 1915, 245,726,000 pounds or 3,051,000 pounds less than in its original report, and the pulled wool 40,000,000 pounds, the same as at first.

SCOURED WOOL, FLEECE AND PULLED.

	Product.	Decrease.	Increase.
1891..... pounds	139,326,703	301,517	.....
1892..... "	145,300,318	.....	5,973,615
1893..... "	151,103,776	.....	5,803,458
1894..... "	140,292,268	10,811,508	.....
1895..... "	125,718,690	14,573,578	.....
1896..... "	115,284,579	10,434,111	.....
1897..... "	111,365,987	3,918,592	.....
1898..... "	111,661,581	.....	295,594
1899..... "	113,958,468	.....	2,296,887
1900..... "	118,223,120	.....	4,264,652
1901..... "	126,814,690	.....	8,591,570
1902..... "	137,912,085	.....	11,097,395
1903..... "	124,366,405	13,545,680	.....
1904..... "	123,935,147	431,258	.....
1905..... "	126,527,121	.....	2,591,974
1906..... "	129,410,942	.....	2,883,821
1907..... "	130,359,118	.....	948,176
1908..... "	135,360,648	.....	5,001,530
1909..... "	142,223,785	.....	6,863,137
1910..... "	141,805,813	417,972	.....
1911..... "	139,896,195	1,809,618	.....
1912..... "	136,866,652	3,029,543	.....
1913..... "	132,022,080	4,844,572	.....
1914..... "	131,840,680	.....	613,600
1915..... "	131,987,960	.....	147,280
1916..... "	130,755,570	1,232,390	.....

VALUE OF THE WOOL PRODUCT FOR TEN YEARS.

The total value of the wool product for the year, estimated on the scoured price in Boston, October 1, was \$107,916,676 for 130,755,750 pounds of clean wool. Last year 131,987,960 pounds were valued at \$85,200,954. The average value per pound of the fleece wool is 84.6 cents and 75.5 cents for pulled wool in clean condition.

	Fleece and pulled. Scoured.	Total value.	Value per pound.	
			Fleece.	Pulled.
	<i>Pounds.</i>		<i>Cents.</i>	<i>Cents.</i>
1906	129,410,942	\$79,721,383	63.8	54.3
1907	130,359,118	78,263,165	62.3	50.2
1908	135,360,648	61,707,516	46.6	41.6
1909	142,223,785	88,829,746	63.6	58.0
1910	141,805,813	72,489,838	51.0	51.75
1911	139,896,195	66,571,337	47.7	47.5
1912	136,866,652	76,020,229	55.2	56.0
1913	132,022,080	57,582,954	43.6	43.4
1914	131,840,680	66,731,237	50.6	46.9
1915	131,987,960	85,200,954	65.7	60.5
1916	130,755,750	107,916,676	84.6	75.5

AVAILABLE SUPPLIES, 1911-1916.

An estimate of the available wool supplies for the year 1916, that is, the clip of the year, imports to October 1 and stock held by dealers January 1, but not including stocks held by manufacturers, either in store or at the mills, follows. The corresponding figures for a series of years are included in the table, which is based on the Boston Commercial Bulletin's estimate of supplies in dealers' hands, the Department of Commerce figures of imports, and the preceding tables.

AVAILABLE SUPPLIES.

	1911.	1912.	1913.	1914.	1915.	1916.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Wool clip, fleece and pulled . .	318,547,900	304,043,400	296,175,300	290,192,000	288,777,000	288,490,000
Domestic wool on hand January 1	142,575,200	106,128,900	66,457,818	64,483,155	54,347,785	89,188,467
Foreign wool on hand January 1	19,946,000	12,484,815	17,002,537	28,550,094	53,579,973	12,903,962
In bond January 1	52,990,238	42,004,855	55,666,626	*2,257,505	*1,092,457	*2,064,474
Foreign wool imported, January 1 to July 1	97,434,095	134,913,297	92,088,202	187,933,386	221,454,523	357,949,002
Total . . .	631,493,433	600,575,267	527,390,483	573,416,122	619,251,738	750,595,905
Imports of wool, July 1 to Oct. 1,	26,527,408	59,011,294	22,736,792	51,157,044	73,886,311	45,671,006
Total to Oct. 1	658,020,841	659,586,561	550,127,275	624,573,166	693,138,049	796,266,911

* Mohair, alpaca, etc.

In the month of October, 1916, the imports of wool amounted to only 8,379,147 pounds, as compared with 32,565,637 pounds in October of the preceding year.

The gross imports for the four months ending October 31, 1916, were as follows:

1916.	Class I.	Class II.	Mohair, etc.	Class III.	Total.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
July	10,298,733	911,236	512,222	3,892,689	15,614,880
August	15,014,148	1,620,052	572,806	2,521,820	19,728,826
September	6,199,307	406,097	1,015,613	2,606,283	10,227,300
October	3,218,967	444,709	226,134	4,489,337	8,379,147
Total	34,731,155	3,382,094	2,326,775	13,510,129	53,950,153

For the corresponding four months of the two preceding years the imports were:

	Class I.	Class II.*	Class III.	Total.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
1914.....	31,517,805	12,019,833	19,576,136	63,113,774
1915.....	62,162,927	10,737,667	33,551,354	106,451,948

* Including mohair, alpaca, etc.

THE ANNUAL WOOL SUPPLY.

The quantity of wool retained for consumption in the United States from 1890 to date is shown in the following table. As the wool clip of the year reaches the market during the governmental fiscal year, the clip of the calendar year is added to the imports of the fiscal year beginning July 1, so that the total supply for a series of years is accurately indicated by this combination, however it may differ from the available supplies in any one year of the series.

12 NATIONAL ASSOCIATION OF WOOL MANUFACTURERS.

WOOL PRODUCED, IMPORTED, EXPORTED, AND RETAINED FOR CONSUMPTION.

Fiscal Year.	Total Imports.	Exports, Domestic and Foreign.	NET IMPORTS.		Production.	Retained for Consumption.	FINE WOOL.	
			Classes I. and II.	Class III.			Retained for Consumption.	Per cent of Foreign.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	
1890-91..	129,303,648	2,930,045	36,783,501	89,882,021	309,474,856	435,848,459	345,966,435	10.63
1891-92..	148,670,652	3,210,019	53,350,167	92,312,922	307,101,507	452,562,140	360,249,218	14.81
1892-93..	172,433,838	4,310,495	46,189,082	122,026,119	333,018,405	501,141,748	379,115,629	12.18
1893-94..	55,152,585	6,497,654	7,167,380	42,007,798	348,538,138	397,193,069	355,185,271	2.02
1894-95..	206,081,890	6,622,190	98,388,318	105,402,507	325,210,712	524,722,428	419,319,921	23.46
1895-96..	230,911,473	12,972,217	126,966,355	97,918,882	294,296,726	512,235,982	414,317,100	30.64
1896-97..	350,852,026	8,700,598	235,282,735	112,141,457	272,474,708	614,626,136	502,485,908	46.84
1897-98..	132,795,302	2,625,971	47,480,033	82,810,437	259,153,251	389,322,582	306,512,145	15.50
1898-99..	76,736,209	14,095,335	3,349,870	60,947,423	266,720,684	329,361,558	268,387,135	1.25
1899-1900	155,918,455	7,912,557	44,680,424	105,525,783	272,191,330	420,197,228	314,671,445	14.20
1900-01..	103,583,505	3,790,067	32,865,844	67,127,159	288,636,621	388,430,059	321,502,465	10.10
1901-02..	166,576,966	3,227,941	69,315,286	93,842,199	302,502,382	465,851,407	371,694,390	18.65
1902-03..	177,137,796	3,511,914	54,747,533	119,397,268	316,341,032	489,666,914	370,569,646	14.63
1903-04..	173,742,834	3,182,803	55,999,545	114,880,236	287,450,000	458,010,031	345,129,795	16.22
1904-05..	249,135,746	2,561,648	134,407,321	112,292,726	291,783,032	538,357,130	426,066,402	31.54
1905-06..	201,683,668	5,642,859	98,336,137	97,902,153	295,488,438	491,534,247	393,632,094	24.99
1906-07..	203,817,545	3,446,748	91,726,655	108,888,982	298,715,130	499,115,927	390,226,945	23.50
1907-08..	123,980,524	5,626,463	57,846,442	62,690,077	298,294,750	418,648,811	346,141,192	16.71
1908-09..	266,409,304	3,523,975	164,867,536	99,046,169	311,138,321	574,023,650	476,005,877	34.60
1909-10..	263,928,232	4,055,473	139,846,192	120,074,087	325,110,749	587,983,508	467,909,421	29.90
1910-11..	137,047,641	8,205,699	45,414,054	84,027,888	321,362,750	450,804,692	366,776,804	12.38
1911-12..	193,400,713	1,719,870	85,531,845	106,148,998	313,547,900	510,228,743	404,078,845	21.12
1912-13..	195,293,255	4,223,161	80,883,313	109,986,781	304,043,400	494,913,494	384,926,713	21.00
1913-14..	247,648,869	1,411,874	144,839,106	101,667,879	296,175,300	542,682,285	441,014,406	32.84
1914-15..	308,083,429	7,259,934	236,631,246	64,192,249	290,192,000	591,015,495	526,823,246	44.91
1915-16..	534,828,022	1,803,570	423,755,453	109,268,999	288,777,000	621,801,432	712,532,453	59.49
1916-17..	.....	.....	.....	.....	288,498,600	.....	.....	.....

The proportion of foreign fine wools increased from 21 per cent in 1913 to 59.49 per cent in the present year, the largest percentage recorded. The next highest was in the year 1896-7, immediately preceding the Dingley tariff, when it was 46.84 per cent. The total quantity of fine wools retained for consumption, both foreign and domestic, amounted to 712,532,453 pounds, an increase of 185,709,207 pounds over the preceding year.

The net imports of Class I and II wools amount to 423,755,453 pounds and are 187,124,307 pounds in excess of the imports of the preceding year. These imports are the largest ever recorded. The net imports of Class III wools were 109,268,999 pounds, the largest since 1912-13, and exceeding by over 69,000,000 pounds the average of the preceding five years.

The following table shows the total and average annual supplies for five-year periods, beginning in 1888, the ten-year periods 1888-1897, 1893-1902, and 1903-1912, and the years 1913, 1914, 1915 and 1916:

WOOL SUPPLY, 1888-1916. — DOMESTIC PRODUCTION AND IMPORTS
LESS EXPORTS.

Fiscal years ending June 30.	All wools.	Fine wools.
	<i>Pounds.</i>	<i>Pounds.</i>
1888-1892. Five years, total.....	2,122,407,842	1,686,818,840
Annual average.....	424,481,568	337,363,768
1893-1897. Five years, total.....	2,549,920,592	2,070,423,829
Annual average.....	509,984,118	414,084,766
1888-1897. Ten years, total.....	4,672,328,434	3,757,242,669
Annual average.....	467,232,843	375,724,267
1898-1902. Five years, total.....	1,988,771,621	1,582,374,537
Annual average.....	397,755,324	316,474,907
1893-1902. Ten years, total.....	4,538,692,213	3,652,798,366
Annual average.....	453,869,221	365,279,837
1903-1907. Five years, total.....	2,476,984,249	1,925,618,882
Annual average, five years.....	495,396,850	385,123,776
1898-1907. Ten years, total.....	4,465,755,870	3,507,993,419
Annual average.....	446,575,587	350,799,342
1908-1912. Five years, total.....	2,541,688,925	2,060,912,139
Annual average.....	508,337,785	412,182,428
1903-1912. Ten years, total.....	5,018,673,174	3,986,531,021
Annual average, ten years.....	501,867,317	398,653,102
1913.....	494,913,494	384,926,713
1914.....	542,682,285	441,014,406
1915.....	591,015,495	526,823,246
1916.....	821,801,452	712,529,402

MOHAIR.

Under the encouragement of a 15 per cent duty the impression among those best informed is that there has been an increase in the production of this valuable fiber, especially in Texas, but as no new official statistics of the production of mohair in this country are available, no change has been made in our estimate of the mohair grown here, which is placed the same as last year at 6,000,000 pounds.

Texas, Oregon, New Mexico, California, and Arizona are the principal sources of supply of domestic mohair.

MOHAIR PRODUCTION IN THE UNITED STATES.

United States Census Reports and Commercial Estimates.

Year.	Fleeces.	Weight of Mohair.
		<i>Pounds.</i>
1900.....	454,932	961,328
1910.....	1,682,912	3,778,706
1912.....		4,000,000*
1913.....		4,500,000*
1914.....		4,500,000*
1915.....		6,000,000*
1916.....		6,000,000*

* Commercial estimate.

STOCK OF WOOL IN BOSTON MARKET.

The stocks of unsold wool in the Boston market December 27, 1915 and 1916, as compiled for the Boston Wool Trade Association are as follows:

	December 27, 1916.	December 27, 1915.
	<i>Pounds.</i>	<i>Pounds.</i>
Territory, California, Texas	16,810,559	32,837,837
Fleeces (grown east of the Mississippi River, and Minnesota, Iowa, and Missouri)	3,888,646	4,470,800
Scoured.....	3,165,249	7,158,049
Pulled	1,547,926	1,527,781
Foreign, Class 1 and 2.....	12,437,743	9,734,193
Foreign, Class 3	1,034,248	1,474,769
Foreign, pulled*	767,400	.....
Foreign, scoured*.....	4,447,713	.....
Total	44,099,484	57,203,429

The unsold stock of wool in Boston January 1, 1913, was 42,849,855 pounds, January 1, 1914, 43,800,549, January 1, 1915, 28,340,308, and January 1, 1916, 57,203,429.

* Not separately reported previously.

SLAUGHTER AND MOVEMENT OF SHEEP.

The total number of sheep killed yearly at four Western centers, Chicago, Kansas City, St. Louis, and Omaha, and total yearly receipts of sheep at Eastern seaboard markets, Boston, New York, Philadelphia, and Baltimore, are reported in the "Chicago Price Current Grain Reporter's Statistical Annual," as follows :

SEABOARD SHEEP RECEIPTS, AND SLAUGHTER AT PRINCIPAL WESTERN POINTS, 1903-1915.

Calendar Year.	Western killings.	Seaboard receipts.	Total.
1903.....	5,827,000	3,314,000	9,141,000
1904.....	5,465,000	3,128,000	8,593,000
1905.....	5,879,000	2,425,000	8,304,000
1906.....	6,117,000	2,606,000	8,723,000
1907.....	5,701,000	2,956,431	8,657,431
1908.....	5,824,000	3,364,349	9,188,349
1909.....	6,578,000	3,346,147	9,924,147
1910.....	6,911,000	3,173,706	10,084,706
1911.....	8,295,000	3,244,000	11,539,000
1912.....	9,055,000	6,426,720	15,481,720
1913.....	8,592,000	3,690,177	12,282,177
1914.....	8,242,000	2,191,254	10,433,254
1915.....	7,000,000	829,873	7,829,873

The Western killings and the seaboard receipts were considerably smaller than in the preceding year, notwithstanding the growth of population and the increasing demand for meat. The decrease for the year in the recorded slaughter at these points is 2,603,381 head and the total 7,829,873.

The Department at Washington furnishes data from which it appears that the number of sheep carcasses inspected by the Government officials at the various slaughter-houses in the country for the year 1914 was 14,229,343, for the year 1915, 12,211,765, and for the first ten months of 1916, 9,787,404.

16 NATIONAL ASSOCIATION OF WOOL MANUFACTURERS.

SHEEP SLAUGHTER OF THE UNITED STATES UNDER THE FEDERAL MEAT
INSPECTION FOR THE FIRST TEN MONTHS OF 1916.

*Compiled from Official Reports of the United States Department of
Agriculture.*

	Chicago.	Kansas City.	National Stock Yards.
1916.			
January	262,848	123,969	24,125
February.....	236,123	122,266	26,274
March	222,223	110,131	31,211
April	217,265	86,095	22,278
May	238,232	98,087	42,014
June	300,917	83,841	83,960
July	267,415	60,634	54,872
August	329,428	92,276	57,287
September	326,646	125,324	32,581
October	333,222	131,251	27,369
Total 10 months, 1916	2,734,319	1,033,874	401,971

SHEEP SLAUGHTER OF THE UNITED STATES. — *Continued.*

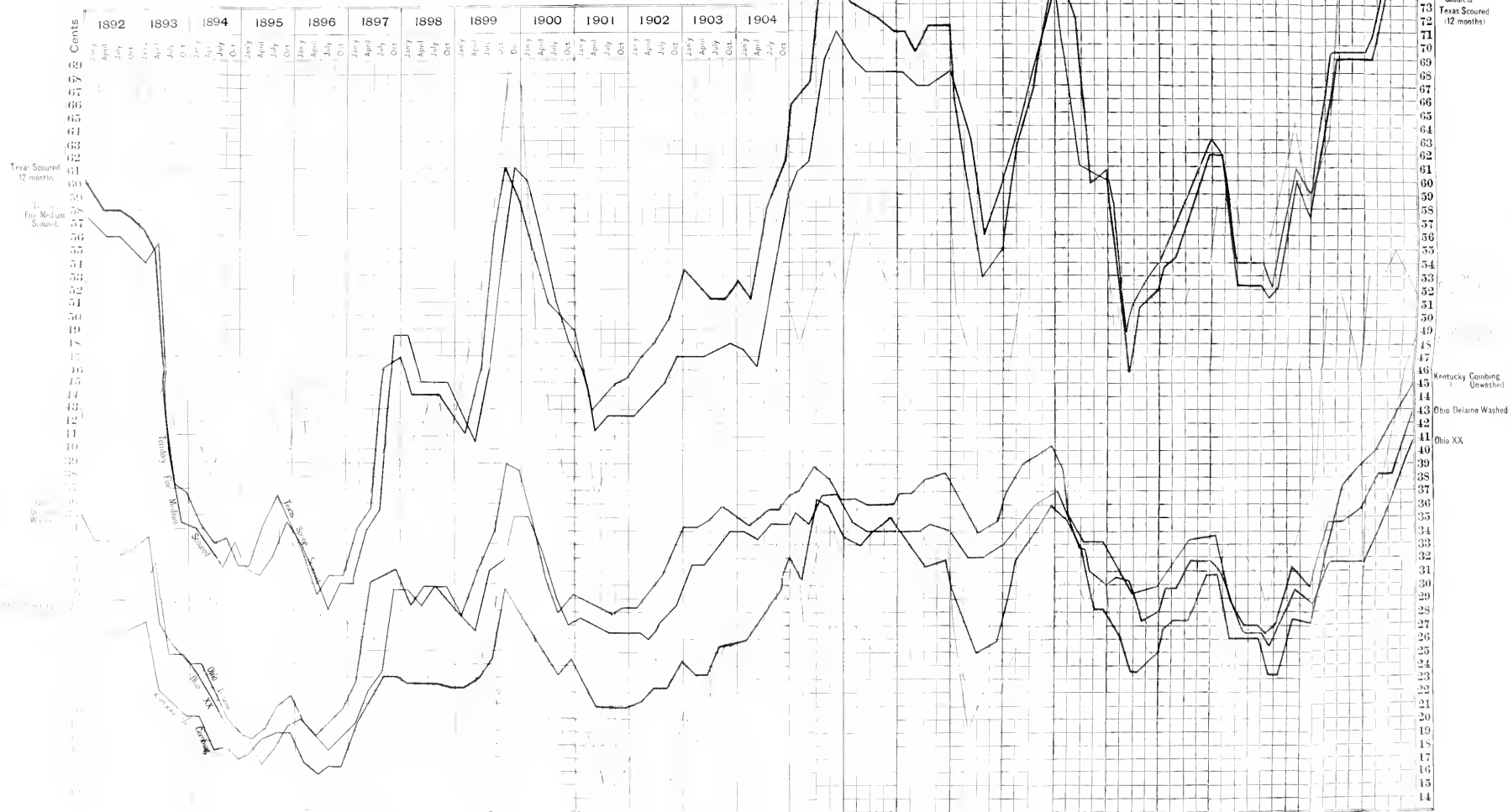
	South Omaha.	South St. Joseph.	All Other Points.
1916.			
January	162,996	59,104	343,375
February.....	145,332	79,997	293,763
March	151,474	69,089	277,354
April	126,137	48,792	268,116
May	86,785	38,270	350,628
June	109,532	40,106	371,468
July	137,719	33,687	375,842
August.....	193,552	47,235	453,060
September	209,087	53,752	410,726
October	192,081	44,856	443,339
Total 10 months, 1916 ..	1,514,695	514,888	3,578,671

FLUCTUATIONS IN WOOL PRICES,

DOMESTIC AND FOREIGN, 1892-1916,

MONTHLY TARIFF: OCTOBER 1, 1894, TO AUGUST 27, 1894, GORMAN-WILSON TARIFF; AUGUST 27, 1894, TO JULY 24, 1897, McINTYRE TARIFF; JULY 24, 1897, TO OCTOBER 5, 1900, ALDRICH-PAYNE TARIFF; OCTOBER 5, 1900, TO OCTOBER 3, 1913, SIMMONS-UNITED WOOL TARIFF; AFTER OCTOBER 3, 1913, DOWNEY TARIFF; OCTOBER 3, 1913, TO OCTOBER 3, 1914, SIMMONS-UNITED WOOL TARIFF; AFTER OCTOBER 3, 1914, DOWNEY TARIFF; OCTOBER 3, 1914, TO OCTOBER 3, 1916, DOWNEY TARIFF.

PUBLISHED BY THE NATIONAL ASSOCIATION OF WOOL MANUFACTURERS, BOSTON, MASS., U.S.A.



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SHEEP

Con

1916.
January
February
March .
April ...
May ...
June ..
July ...
August
Septemb
October

Total

1916.
January .
February
March ...
April
May
June
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August..
Septembe
October .

Total

BOSTON WOOL PRICES.

The Boston prices of domestic wools in October for the last fifteen years are shown in the table which follows :

COMPARATIVE PRICES OF DOMESTIC WOOL IN BOSTON, OCTOBER, 1902-1916.

	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
OHIO, PENNSYLVANIA, AND WEST VIRGINIA. (<i>Washed.</i>)															
XX and above . . .	28½	34	35	36½	34	34	33	36	30	28	31	26	30	32	40
Medium	29	32	36	41½	40	40	34	40	34	31	37	30	33	40	*
Fine Delaine	31½	36	36	37½	36	38½	35	40	34	30	24	27	31	34	43
(<i>Unwashed.</i>)															
Fine	21½	23½	24	27	26	27	23	28	22	20	23	20	24	26	33
Medium	23	25	30	34½	33	33	26	36	28	25	30	23	27	36	*
Fine Delaine	24	26	27	30	28	31	28	33	26	24	28	22	26	30	37
MICHIGAN, WISCONSIN, NEW YORK, ETC. (<i>Washed.</i>)															
Fine	24	27½	27½	31*	30*	30*	28*	31*	28*	*	*	*	*	*	*
Medium	27	31	35	40	39	39	33	38	33	30	36	29	32	38	*
Fine Delaine	29	34	34	36	34	37	34	38	32	28	35	26	29	32	*
(<i>Unwashed.</i>)															
Fine	19	21½	22	25	24	25½	22	26	20	18	22	19	22	24	30
Medium	21½	24	29	33	32	32	25	34	27	24	29	22	26	35	41
Fine Delaine	22	23½	25	28	26	29	26	32	25	22	26	21	24	28	36
KENTUCKY AND INDIANA. (<i>Unwashed.</i>)															
Medium	22½	24½	30	35	33	31	25	35	28	25	31	24	27	39	44
MISSOURI, IOWA, AND ILLINOIS. (<i>Unwashed.</i>)															
Medium	21½	23½	29	34	32	30	24	32	26	23	28	22	25	35	40
TEXAS. (<i>Scoured Basis.</i>)															
Fine, 12 months . . .	52½	52½	62	75	70	71	55	75	60	52	62	52	58	68	83
Fall, fine	45	42½	52	62	58	58	45	60	50	44	50	43	48	57	60
CALIFORNIA. (<i>Scoured Basis.</i>)															
Spring, Northern, free, 12 months . .	50	52	62	74	70	68	50	70	55	48	54	48	53	65	80
Fall, free	43	42½	53	62	60	58	40	53	45	40	45	40	45	55	57
TERRITORY WOOL, IN- CLUDING MONTANA, WYOMING, UTAH, IDAHO, OREGON, ETC. (<i>Scoured Basis.</i>)															
Staple fine	55	55	65	76	71	73	60	78	65	60	67	54	60	72	90
" medium	50	51	60	70	66	68	52	70	57	52	60	47	53	65	80
Clothing, fine	48	50	60	72	68	65	53	70	58	50	60	48	55	68	80
" medium	45	46	55	68	63	60	45	65	50	45	56	43	50	60	78

* Nominal.

18 NATIONAL ASSOCIATION OF WOOL MANUFACTURERS.

BOSTON RECEIPTS AND SHIPMENTS OF WOOL.

The following table shows the receipts of domestic and foreign wools separately and also the total receipts, with the reported shipments of all wools for a period of ten years, as compiled by the Boston Chamber of Commerce:

YEARLY RECEIPTS AND SHIPMENTS OF WOOL AT BOSTON FOR TEN YEARS 1907-1916, INCLUSIVE.

YEAR.	RECEIPTS.			SHIPMENTS REPORTED.
	Domestic.	Foreign.	Total.	All Wools.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
1907.....	185,879,807	96,212,199	282,092,006	236,246,461
1908.....	190,470,231	76,097,317	266,567,548	198,523,505
1909.....	247,463,739	149,487,123	396,950,862	263,810,867
1910.....	195,536,835	81,173,849	276,710,684	217,761,880
1911.....	230,391,364	67,759,223	298,150,587	217,239,723
1912.....	236,458,198	124,143,562	360,601,760	276,912,464
1913.....	161,800,680	63,336,325	225,136,325	183,710,214
1914.....	190,730,629	144,145,491	334,876,120	267,149,305
1915.....	181,700,678	247,914,385	429,615,063	272,473,422
1916.....	205,194,677	234,998,488	440,193,165	302,868,263

The following tables show the annual receipts of domestic and foreign wool in Boston by months for the years 1913 to 1916, inclusive, and the shipments in pounds from Boston as reported by the several railroads and by sea for the year:

SHIPMENTS OF WOOL FROM BOSTON BY MONTHS (POUNDS).
(*Boston Chamber of Commerce, James A. McKilben, Secretary.*)

1916.

RAILROADS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total for Year.
Boston & Albany R.R.:													
Boston & Albany Grand Junction	2,693,491	2,678,627	4,198,014	4,345,982	4,771,774	4,639,707	4,690,961	4,799,022	3,878,114	3,587,941	2,048,150	2,596,772	44,878,555
New York, New Haven & Hartford R.R.:	1,789,919	3,776,940	1,844,380	1,719,312	1,346,487	994,290	1,254,270	1,010,890	173,140	253,190	42,420	40,480	14,227,718
Boston & Maine R.R.:	9,596,740	8,057,390	12,188,160	7,914,450	5,429,220	5,198,310	4,724,744	3,853,709	4,783,840	5,408,850	6,675,370	8,620,953	81,551,646
Terminal Mystic Wharf	8,949,808	10,335,030	13,923,268	15,999,716	7,339,603	5,083,732	6,730,688	4,660,392	5,089,474	5,484,786	2,819,212	5,809,837	92,227,014
By sea	3,789,490	3,965,391	3,826,092	2,029,832	1,544,426	5,247,553	1,867,873	1,680,866	1,453,113	1,890,508	1,948,566	1,316,832	32,566,742
	3,855,138	3,699,700	2,437,654	2,595,761	2,890,650	2,536,463	4,248,340	2,575,721	1,862,100	4,449,944	3,409,524	2,536,993	37,421,988
Total for months,	39,654,586	32,473,188	40,417,568	34,069,053	23,322,218	23,702,055	23,516,876	18,580,600	17,241,781	21,025,229	16,943,242	20,921,867	302,868,263
Total after January 1	39,654,586	63,127,774	103,545,342	137,614,395	160,936,613	184,638,668	208,155,544	226,736,144	243,977,925	265,003,154	281,946,396	302,868,263	
Total after January 1 preceding year	18,623,423	39,107,255	64,833,298	86,732,582	107,880,889	133,078,505	158,452,782	182,475,976	210,938,644	232,522,855	256,666,218	272,473,422	

The above table does not cover all the shipments of wool from Boston during the year, but as the Chamber of Commerce explains, comprises only those of which the transportation companies render an account. It appears from the previous table that the receipts of wool, both foreign and domestic, during the year amounted to 440,193,155 pounds, a quantity 137,314,902 pounds greater than the table of shipments accounts for. The Boston Wool Trade Association reports 44,099,484 pounds of wool unsold in Boston in dealers' hands on December 27, but deducting this amount there are still over 90,000,000 pounds of this year's receipts unaccounted for, in addition to any amount carried over from 1914. It may be that manufacturing concerns have considerable quantities on storage here, but if transportation companies would give more complete statements of the movement of wool, the information would be greatly appreciated by the trade.

STATISTICS OF IMPORTS OF WOOL AND WOOLENS.

We are indebted to the Hon. E. E. Pratt, Chief of the Bureau of Foreign and Domestic Commerce of the Department of Commerce, for the facts relating to the imports of wool and wool manufactures for the fiscal year ending June 30, 1916, which are given in the following tables. The table of imports of wool and manufactures of wool entered for consumption for the fiscal years ending June 30, 1915 and 1916, will be found on pages 112-119. Its totals differ from the statements of similar imports on page 30 because the latter reports the actual imports during the year, some of which entered at once into consumption and some were stored in government bonded warehouses. The table on page 30 shows the goods which entered into consumption on arrival, plus those taken from bonded warehouse, some of which may have been imported in previous years.

WOOL IMPORTED INTO BOSTON, NEW YORK, AND PHILADELPHIA.
BY PORTS AND CLASSES.

GROSS IMPORTS YEAR ENDING JUNE 30.	BOSTON.			NEW YORK.			PHILADELPHIA.			TOTAL.
	Class 2.		Class 3.	Class 1.		Class 2.	Class 3.		Class 1.	
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
896.....	78,398,112	9,539,881	30,325,673	28,939,693	543,352	52,764,614	8,301,279	2,070,608	15,055,110	225,938,322
897.....	137,221,457	23,156,843	33,421,729	48,428,014	2,371,604	62,522,561	9,884,925	1,811,398	13,676,511	332,495,042
898.....	36,205,712	2,672,113	22,823,137	5,805,916	458,732	50,071,999	2,306,013	17,505	9,661,885	130,083,012
899.....	8,335,942	1,354,556	12,456,404	2,911,683	155,121	43,251,114	1,517,560	344,368	4,971,888	75,498,636
900.....	30,192,843	5,343,455	29,333,226	3,561,996	1,275,008	61,922,600	3,281,782	3,266,758	14,486,204	152,663,872
901.....	22,416,924	3,396,580	19,963,032	5,602,497	210,782	39,112,400	2,072,551	572,304	8,171,451	101,518,521
902.....	51,479,822	2,820,800	21,778,976	7,308,817	920,301	52,417,988	5,468,922	266,807	19,780,677	162,243,110
903.....	30,601,779	8,877,714	35,294,573	5,323,738	1,693,694	54,119,001	4,443,990	1,991,395	29,648,574	171,994,458
904.....	37,821,884	8,980,496	37,984,968	3,070,482	1,389,643	48,582,335	4,509,591	362,262	27,639,439	170,401,040
905.....	86,741,441	19,018,797	37,070,260	9,908,856	2,908,801	44,082,025	11,146,872	1,569,526	30,346,375	242,792,953
906.....	64,801,760	8,336,094	22,420,950	8,555,810	1,657,970	49,278,261	10,227,347	1,772,888	26,788,974	193,840,054
907.....	61,116,729	4,204,964	25,713,122	8,817,037	1,159,185	61,357,911	8,744,454	854,390	22,226,390	194,194,182
908.....	34,002,148	7,247,799	13,023,020	3,397,855	522,524	36,778,123	6,220,038	459,275	16,647,519	118,298,301
909.....	114,512,293	11,591,627	24,757,185	11,100,437	383,908	52,853,241	12,531,238	1,852,418	24,005,573	253,587,920
910.....	79,232,943	17,022,966	27,476,785	14,399,419	1,574,625	66,098,923	13,081,388	4,635,818	26,762,386	250,285,253
911.....	32,689,348	5,532,189	20,117,152	1,927,443	252,927	43,540,674	2,205,818	531,663	18,818,639	125,015,853
912.....	54,443,667	5,840,571	25,538,651	4,189,259	473,126	56,040,867	6,878,019	1,162,021	22,660,591	177,226,772
913.....	50,887,889	8,468,552	27,131,377	3,652,043	692,695	55,702,561	6,483,156	2,575,977	24,667,461	180,261,721
914.....	100,371,290	8,630,104	23,809,154	11,409,227	2,863,728	53,845,615	9,364,414	1,094,239	23,199,709	236,080,682
915.....	161,405,006	8,934,849	7,926,024	26,414,800	1,849,884	52,391,984	8,822,355	1,097,321	4,715,701	273,557,924
916.....	230,947,637	10,152,641	12,916,602	76,740,485	6,389,584	86,270,319	15,141,718	702,755	9,223,693	448,494,434

NOTE. — These figures represent about 95 per cent of the total quantity of wool imported into all the ports of the United States.

WOOL IMPORTED INTO BOSTON, NEW YORK, AND PHILADELPHIA.
BY PRINCIPAL COUNTRIES OF PRODUCTION.

YEAR ENDING JUNE 30.	Russia.		Turkey.		United Kingdom.		Argentina.		Uruguay.		Chinese Empire.		British E. Indies.		British Oceania.		All other Countries.		TOTAL.	
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
1896.....	13,150,509	17,987,753	14,229,068	32,281,341	9,048,350	26,084,232	9,897,531	72,995,090	30,264,448	225,938,322										
1897.....	19,706,449	20,239,717	27,759,419	64,969,556	15,004,257	21,461,478	10,989,980	109,912,851	42,451,335	332,495,042										
1898.....	16,999,224	9,282,762	12,434,332	16,734,279	1,309,974	20,363,294	6,445,063	31,877,252	14,630,832	130,083,012										
1899.....	13,373,350	5,697,377	9,156,624	7,957,657	149,573	14,276,124	6,949,491	7,249,740	10,688,700	75,498,636										
1900.....	18,869,252	9,577,147	20,393,063	20,064,279	1,072,307	30,998,289	9,397,020	23,121,394	19,171,121	152,663,872										
1901.....	13,720,814	8,355,941	16,919,793	14,358,218	783,075	9,181,105	4,146,698	22,570,030	11,482,847	101,518,521										
1902.....	16,322,231	12,215,316	21,737,509	45,287,370	533,634	18,843,396	6,813,401	26,559,531	13,930,722	162,243,110										
1903.....	19,455,392	15,440,933	31,778,842	23,265,309	541,384	26,032,976	11,850,446	25,238,498	18,390,678	171,994,458										
1904.....	23,403,797	17,742,473	26,807,042	28,168,060	112,208	24,912,491	10,088,556	25,792,098	13,374,315	170,401,040										
1905.....	23,790,451	23,454,937	25,213,450	47,695,567	7,740,309	30,023,157	12,202,135	56,212,733	16,460,214	242,792,953										
1906.....	21,180,755	16,032,199	21,615,963	42,167,927	5,807,190	30,233,762	6,011,319	39,548,551	11,242,388	193,840,054										
1907.....	21,231,378	15,710,735	14,863,620	23,195,208	5,856,611	39,762,115	8,697,581	52,538,582	12,338,352	194,194,182										
1908.....	12,913,964	10,686,993	15,747,766	16,221,285	1,604,221	21,717,431	4,936,421	27,032,576	7,438,644	118,298,301										
1909.....	7,966,392	10,050,199	31,125,711	58,379,834	5,868,232	35,634,909	12,952,758	79,420,778	12,189,107	253,587,920										
1910.....	13,263,175	13,521,623	37,097,134	31,082,184	8,789,785	46,599,037	16,603,135	68,199,625	15,128,955	250,285,253										
1911.....	12,944,356	9,532,982	12,854,102	17,891,376	711,525	30,035,965	10,831,635	20,494,162	20,494,162	125,015,853										
1912.....	20,253,067	13,682,915	13,656,409	27,621,628	3,216,988	32,636,950	15,725,299	38,494,677	11,938,839	177,226,772										
1913.....	24,595,118	15,437,035	19,330,440	26,742,584	3,718,873	35,572,181	10,212,091	31,852,863	12,680,536	180,261,721										
1914.....	22,845,353	10,357,809	22,023,698	42,276,542	13,017,718	31,077,858	14,149,719	64,697,584	14,141,199	236,080,682										
1915.....	2,290,408	4,729,540	16,446,538	77,808,041	16,597,623	36,717,754	2,120,343	75,865,711	40,981,966	273,557,924										
1916.....	3,309,879	331,191	23,326,562	129,163,383	9,508,756	47,435,167	11,477,709	122,361,839	*101,579,848	448,494,434										

* 78,430,380 pounds of wool included in "All other Countries" came from British South Africa.

NOTE. — These figures represent about 95 per cent of the total quantity of wool imported into all ports of the United States.

IMPORTS OF WOOL BY PORTS AND CLASSES.

These tables show the gross imports of wool brought into the three principal wool importing centers both by classes and ports, but as stated in the footnotes to the tables there is a moderate quantity imported each year into minor ports. The tables show a great increase in the quantity of wool imported, as compared with the preceding year. Boston retains her supremacy in the importation of Class I wools, receiving a total of 230,947,637 pounds, against 76,740,485 pounds in New York and 15,141,718 pounds in Philadelphia. The imports of Class II wools amounted to 17,244,980 pounds, of which 9,048,207 pounds were mohair, alpaca, etc. This is the largest importation of these wools in any one year since 1910. The imports of Class III wools into New York amounted to 86,270,319 pounds, a total sixty-four millions of pounds in excess of the receipts of similar wools in Boston and Philadelphia. The total importation of Class III wools in the three ports amounted to 108,710,614 pounds, and of all wools, including mohair, etc., to 448,494,434 pounds. In all the ports the quantity of wool received was much in excess of any previous year.

COUNTRIES OF PRODUCTION AND SHIPMENT.

The countries of production and immediate shipment of wools imported into the United States during the fiscal year ending June 30, 1916, and the quantity of wool from each are as follows. This statement has been compiled with much care from the "Monthly Summaries" of the Department of Commerce.

WOOL IMPORTED INTO BOSTON, NEW YORK, AND PHILADELPHIA, FISCAL YEAR
ENDING JUNE 30, 1916, BY COUNTRIES OF PRODUCTION, IMMEDIATE SHIPMENT,
AND CLASSES.

Compiled from Reports of United States Bureau of Foreign and Domestic Commerce.

COUNTRIES OF PRODUCTION.	Countries of Immediate Shipment.	Class I.	Class II.	Mohair, Alpaca, etc.*	Class III.	TOTAL.
		<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
EUROPE:						
Austria-Hungary,	Austria-Hungary				25,462	25,462
France	France				227,153	227,153
Greece	Greece		6,503		642,932	649,435
Iceland	Denmark				90,000	90,000
Italy	Italy				82,364	82,364
Norway	Norway				9,922	9,922
Portugal	Portugal				284,600	
	England				24,746	309,346
Russia in Europe	Russia in Europe				604,475	
	England			9,036	65,565	1,414,126
	Japan				735,050	
Spain	Spain	69,044	22,000		1,709,161	
	Portugal				276,892	2,077,097
Turkey in Europe	England			221,096	49,827	270,923
United Kingdom:						
England	England	1,906,070	3,143,064	282,234	5,401,610	
	Scotland				110,253	10,843,231
Ireland	England		228,142			228,142
Scotland	Scotland	24,669	457,113		9,557,683	
	England		296,000		1,919,624	12,255,089
Total		1,999,783	4,152,822	512,366	21,817,319	28,482,290
ASIA:						
British India	British India	193,603	31,852		2,629,652	
	England	542,087		11,095	8,097,855	11,506,144
	China	1,221,057	242,038	340,677	44,482,264	
	England		2,278		8,783	
China	Italy				435,850	
	Japan				146,006	47,435,467
	Russia in Asia				455,820	
	Russia in Europe		100,694			
Japan	Japan				28,246	28,246
Persia	England	205,777			51,462	257,239
	Russia in Asia				1,510,188	
Russia in Asia	England				85,848	1,895,753
	Japan				299,717	
Turkey in Asia	Turkey in Asia				42,560	
	England				17,708	60,268
Total		2,162,524	376,862	351,772	58,291,959	61,183,117

* Previous to 1913 included with Class II wools.

WOOL IMPORTED INTO BOSTON, ETC. — *Continued.*

COUNTRIES OF PRODUCTION.	Countries of Immediate Shipment.	Class I.	Class II.	Mohair, Alpaca, etc.*	Class III.	TOTAL.
		<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
AFRICA:						
British S. Africa,	{ British S. Africa	61,879,305	21,780	3,701,538	7,559,665	78,430,380
	{ Canada	2,130		3,180,684		
	{ England	2,085,278				365,840
Egypt	{ Egypt	77,282				
	{ England	255,755	9,306		23,497	
Total		64,299,750	31,086	6,882,222	7,583,162	78,796,220
NORTH AMERICA:						
Canada	Canada	116,963	20,000			136,963
Nova Scotia, etc.,	Nova Scotia, etc.	141,109				141,109
Mexico	Mexico	9,249			123,151	132,445
Total		267,366	20,000		123,151	410,517
CENTRAL AMERICA:						
Costa Rica	Costa Rica	19,574				19,574
Guatemala	Guatemala		19,440		11,458	30,898
Total		19,574	19,440		11,458	50,472
SOUTH AMERICA:						
Argentina	{ Argentina	109,861,564	3,239,552		14,670,272	129,163,353
	{ England	1,165,651				
	{ France	26,539				
Brazil	{ Uruguay	199,785				87,864
	{ Brazil	87,864				
Chile	{ Chile	9,449,612		1,038	3,828,210	13,315,758
	{ England	16,276				
	{ Panama	200			20,422	
Colombia	Argentina	224,428				224,428
Ecuador	Ecuador	161,877			75,226	237,103
Peru	{ Peru	2,426,279	54,039	1,297,791	978,316	5,474,624
	{ England	436,553		3,018	271,603	
	{ Panama				7,025	
Uruguay	{ Uruguay	8,741,728	245,090		405,164	9,508,746
	{ England	68,067				
	{ France	48,697				
Venezuela	Venezuela				2,523	2,523
Total		132,915,140	3,538,681	1,301,847	20,258,761	158,014,399
AUSTRALASIA:						
Australia and Tasmania	{ Australia and Tasmania	82,598,713	66,882		17,627	96,426,829
	{ England	13,571,912			163,868	
	{ Scotland	7,827				
New Zealand	{ New Zealand	15,424,769				24,934,710
	{ England	9,431,058			78,883	
Total		121,034,279	66,882		260,378	121,361,539
SUNDRY ISLANDS:						
Cuba	Cuba				654	654
Dutch W. Indies, Falkland Islands, Jamaica	Dutch West Indies, England	131,424			22,919	154,343
Malta Gozo, Cyprus, etc.,	Jamaica				478	478
	England				40,375	40,375
Total		131,424			64,426	195,850
Grand Totals,		322,829,840	8,205,773	9,048,207	108,410,614	448,494,434

* Previous to 1913 included with Class II wools.

WOOL IMPORTED INTO BOSTON, ETC. — *Concluded.*

RECAPITULATION BY GRAND DIVISIONS.

PLACES OF PRODUCTION.	Class I.	Class II.	Mohair, Alpaca, etc.*	Class III.	Total.
Europe	1,999,783	4,152,822	512,366	21,817,319	28,482,290
Asia	2,162,524	376,862	351,772	58,291,959	61,183,117
Africa	64,299,750	31,086	6,882,222	7,583,162	78,796,220
North America	267,366	20,000		123,151	410,517
Central America	19,574	19,440		11,458	50,472
South America	132,915,140	3,538,681	1,301,847	20,258,761	158,014,399
Australasia	121,034,279	66,882		260,378	121,361,539
Islands	131,424			64,426	195,850
Totals	322,829,840	8,205,773	9,048,207	108,410,614	448,494,434
In addition to the imports thus specified there were imported into other ports, the countries of pro- duction and shipment not being named	80,291,745	5,086,387	97,071	858,385	86,333,588
Thus the total imports were .	403,121,585	13,292,160	9,145,278	109,268,999	534,828,022

* Previous to 1913 included with Class II wools.

The imports of Class I wools into the three ports were 126,187,-679 pounds in excess of those of last year, which were 75,497,230 pounds in excess of those of the previous year and surpassed the imports of 1914 and 1915 combined, as appears from the following tabular statement, which covers the last four years and shows also the amount coming into this country from each of the principal countries of production. Never before have the imports of Class I wools reached so great a volume, in fact they exceed the imports of wools of all classes in any preceding year.

	1916.	1915.	1914.	1913.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Australasia	120,707,019	75,826,825	64,319,919	31,818,992
Argentina	111,253,529	67,076,516	36,301,837	24,393,428
Uruguay	8,858,492	16,561,154	11,639,243	3,537,724
British South Africa*	63,966,713	26,452,132		
All other	18,042,087	10,725,534	8,883,932	1,272,954
	322,829,840	196,642,161	121,144,931	61,023,098

* Included previously in "All other."

The British islands, the home of Class II wools, furnished 4,124,319 pounds of the 8,205,773 pounds of strictly Class II wools imported into the three ports during the year. Adding to the total of Class II wools 9,048,207 pounds of Angora goat hair (which comes from Turkey and the Cape of Good Hope, and is known as mohair), and camel, vicuña, and similar hairs, the product of Asia and South America, the total of all Class II wools imported into the three ports amounted to 17,253,980 pounds. Until October 3, 1913, these hairs were always reported as wools of Class II, having been subject to the same rates of duty and they are so included in this statement for purposes of comparison, although subject to a 15 per cent duty, while under the present tariff law other wools are free.

Class III wool comes from nearly every portion of the globe, but principally from the countries named in the subjoined statement, which covers the imports of the last three years. These wools are mostly used for the manufacture of carpets and low grade blankets. The imports of these wools are more than fifty per cent greater than in the preceding year and are fully up to their usual average quantity, although there has been a great change in the countries where they originated. The imports from Russia and Turkey have been greatly reduced as was to be expected. China has largely increased her contribution as also have the United Kingdom and Argentina. All the other countries have remained about stationary, or fallen behind.

	1916.	1915.	1914.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Chinese Empire	45,528,723	36,125,308	30,961,452
Russia (Europe and Asia)...	3,300,843	2,297,341	22,769,482
United Kingdom.....	16,989,170	7,125,345	7,416,182
Turkey (Europe and Asia) ..	110,098	3,505,238	9,817,164
British East Indies	10,727,757	2,032,923	14,107,320
Argentina.....	14,670,272	10,641,323	5,577,725
Germany .....	.....	350,590	2,598,986
France	227,153	65,278	1,504,349
Iceland	90,000	263,192	1,747,326
All other	16,766,598	2,627,171	3,354,492
	108,410,614	65,033,709	100,854,478

The following table gives the total gross imports into the United States for a series of fiscal years. The quantity imported into other than the principal ports can be ascertained by comparison with other tables.

GROSS IMPORTS OF WOOL, FISCAL YEARS 1904-1916—POUNDS.

	Class I.	Class II.*	Class III.	Total.
1904... ..	45,575,993	12,934,143	115,232,698	173,742,834
1905.....	109,888,258	26,551,624	112,695,864	249,135,746
1906.....	86,810,307	15,204,254	99,674,107	201,688,668
1907.....	82,982,116	10,671,378	110,194,051	203,847,545
1908.....	45,798,313	13,332,540	66,849,681	125,980,524
1909.....	142,580,993	21,952,259	101,876,052	266,409,304
1910.....	111,604,330	31,614,235	120,721,019	263,939,584
1911.....	40,104,845	12,456,468	85,086,328	137,647,641
1912.....	71,203,329	15,557,664	106,639,720	193,400,713
1913.....	67,238,715	16,886,446	111,168,094	195,293,255
1914.....	125,088,761	20,556,795	102,003,313	247,648,869
1915.....	222,017,420	20,356,212	65,709,752	308,083,429
1916.....	403,121,585	22,437,438	109,268,999	534,828,022

* Includes mohair, etc.

IMPORTS OF WOOL MANUFACTURES.

The gross imports of manufactures of wool show a total foreign value of \$15,657,537, an amount but little more than half of the corresponding imports of the previous year, and about eight millions less than the average of the preceding five years.

These, being the foreign invoice values, cannot properly be used for comparison with the value of home manufactures, except by the addition of the customs duties paid. For such purposes the table of imports entered for consumption in which the duty paid is given will be found useful.

IMPORTS OF WOOL MANUFACTURES, 1911-1916. (FOREIGN VALUE.)

GROSS IMPORTS, YEARS ENDING JUNE 30.	1911.		1912.		1913.		1914.		1915.		1916.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Carpets (sq. yds.)	1,003,741	\$3,807,805	841,249	\$3,850,804	1,085,431	\$4,895,989	1,073,877	\$4,452,309	1,059,172	\$2,947,057	733,458	\$2,371,351
Clothing, etc., except shawls and knit goods . . . . .	. . . . .	2,274,756	. . . . .	2,171,477	. . . . .	2,158,384	. . . . .	2,268,125	. . . . .	1,800,391	. . . . .	1,127,536
Cloth, pounds	4,727,279	5,142,507	4,119,110	4,630,478	4,285,495	4,888,447	12,385,586	12,794,048	10,648,990	10,262,732	6,117,908	6,479,063
“ square yards . . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	17,129,292	. . . . .	8,880,828	. . . . .
Dress goods (sq. yds.)	30,414,343	6,262,566	15,415,245	3,279,198	15,712,155	3,321,626	19,442,047	2,376,549	29,542,723	7,320,867	6,914,313	1,805,880
“ “ pounds . . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	24,521,451	4,396,660	8,000,010	. . . . .	1,696,259	. . . . .
Manufactures of mohair, etc. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	1,448,898	. . . . .	2,243,660	. . . . .	1,673,029
Wool wastes . . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	36,530,487	3978,709	. . . . .	834,864	. . . . .	1,207,517
All other . . . . .	. . . . .	1,082,157	. . . . .	980,662	. . . . .	1,053,695	. . . . .	5,578,906	. . . . .	4,381,785	. . . . .	993,161
Total . . . . .	. . . . .	18,569,791	. . . . .	14,912,619	. . . . .	16,318,141	. . . . .	34,294,204	. . . . .	29,791,356	. . . . .	15,657,537

¹ July to December, 1913, inclusive.² January to June, 1914, inclusive.³ Since November 30, 1913.

IMPORTS OF WOOL AND MANUFACTURES OF WOOL ENTERED
FOR CONSUMPTION.

The imports of wool and manufactures of wool entered for consumption for this and the preceding fiscal year for which the full table appears on pages 112 to 119 compare as follows :

IMPORTS OF WOOL.

	Fiscal Years Ending June 30 —			
	1916.		1915.	
	Pounds.	Value.	Pounds.	Value.
Class I	402,656,014	\$112,163,864	218,073,488	\$51,985,436
Class II, including mohair, alpaca, etc.	22,449,757	6,316,969	19,759,433	5,190,458
Class III	109,438,340	23,993,960	65,479,979	10,855,618
Total	534,544,111	\$142,474,793	303,312,900	\$68,031,512

The imports for consumption of the principal wool manufactures compare as follows :

IMPORTS OF MANUFACTURES OF WOOL.

	1916.		1915.	
Cloths	pounds, 7,540,804; value, \$7,796,151		pounds, 12,610,396; value, \$11,501,099	
Dress goods . . }	sq. yds., 9,969,222 } pounds, 2,413,491 }	value, \$2,356,689	sq. yds., 28,352,801 } pounds, 7,797,435 }	value, \$7,063,707
Carpets	sq. yds., 774,519; value, \$2,667,967		sq. yds., 1,079,876; value, \$3,212,046	
Yarns	pounds, 443,306; " 333,568		pounds, 3,299,404; " 2,313,477	
Tops	" 1,431,385; " 551,004		" 3,478,975; " 1,796,580	

The foreign value of wool manufactures imported is about two millions of dollars greater than in the fiscal year 1912, the last whole year under the old tariff. This is due as much to the increased value of fabrics as to any increase in quantity of goods imported.

The American manufacturer has been well employed in making goods for the American public, although it is true that dur-

ing the earlier months of the year a very considerable quantity of fabrics was exported.

These exports, however, were confined mostly to military goods. This source of employment no longer exists, for the present policy of the foreign governments is to limit their orders for such supplies to themselves or their allies.

IMPORTS OF WOOL MANUFACTURES ENTERED FOR CONSUMPTION.

The imports of wool manufactures for the five latest years compare as follows:

Fiscal Years.	Foreign Value.	Duty Collected.	Duty Paid Value.
1916.....	\$17,151,396	\$5,776,935	\$22,928,331
1915.....	29,879,621	9,701,772	39,581,393
1914.....	33,519,799	14,387,242	47,907,041
1913.....	15,031,317	12,293,904	27,325,221
1912.....	15,182,694	12,599,246	27,781,940

THE ENGLISH MARKET.

The most interesting features of the English market have been the Russian demand for merinos, especially the best scoured, and the high prices obtained for greasy, long-combing wools, while at the same time poorer qualities have met with a ready sale. Heretofore carbonizing has not been much in vogue in England, this business being to a great extent confined to the Continent, but this year there has been a marked increase in the carbonizing plants, and in the future South American and other burry wools will find a market not only in Europe, but also in England and thus give her manufacturers access to a useful class of wools from which they have been in a measure debarred.

In June the home clip was commandeered by the government, a step which excited a great deal of criticism, both favorable and the reverse, and opinion still appears to be divided as to the wisdom of the procedure. But whatever the result or whatever measures may be decided upon in the future the feeling in the wool trade seems to be that the authorities must be supported in whatever steps are deemed necessary for the successful prosecution of the war.

LONDON SALES, 1916.

Of the London sales, of which there were eight series, Messrs. Schwartze, Buchanan & Co. say :

The first series of London sales of Colonial wool, which commenced on January 18, closed February 5 :

The net total available amounted to 122,000 bales.

There was the usual attendance of buyers and the tone was strong.

This series has again witnessed a marked advance in prices. Greasy merino opened with about 5 per cent rise, but hardened further in the course of the sales and may now be quoted at from 5 to 10 per cent over December.

Crossbreds at first ruled 5 per cent over December level, but here, too, the rise became more pronounced, and at the close fine grades are $7\frac{1}{2}$, medium 10, and coarse 10 to 15 per cent over the close of last sales. Slipes are $7\frac{1}{2}$ to 10 per cent dearer.

Cape grease sold at first at 5 per cent, but latterly at $7\frac{1}{2}$ per cent advance. Among snow whites, the very best, which had already reached a high level last series, have risen $7\frac{1}{2}$ per cent, while the bulk of ordinary snow whites have continued to harden all through and are now from 15 to 20 per cent over December.

The record of the quantities of some of the principal wools disposed of at the various sales will be found in the table at the close of these comments.

The second series of London sales of Colonial wool which commenced on February 29, closed March 17 :

The net total available amounted to 96,000 bales.

Partly owing to financial stringency and to fears of labor shortage, and partly to renewed difficulties in obtaining permits for export and the resultant restriction of outside competition, the extremely high level of last sales has not been maintained. Nevertheless, some extraordinary prices have been realized — 42 pence for Sydney scoured, 41 for Port Phillip, $40\frac{1}{2}$ for Queensland, 31 for Port Phillip greasy lambs, and 25 for Sydney greasy combing.

Among merino wools the best scoured showed but little change from the high prices reached in January. Ordinary scoureds, which opened on a par with the previous sales, were for a time 5 per cent easier, but have now recovered. Well-bred, greasy wool of good staple ruled throughout a bare 5 per cent below last series. Medium wools at the outset were $7\frac{1}{2}$ per cent; faulty, wasty, and short parcels 10 per cent easier, and declined a

further 5 per cent in the course of the sales, but have recovered this additional fall and are now back at the opening level.

Crossbreds opened with a 5 per cent decline. In the case of fine wools (in small supply this sales) the drop was recovered, and they are now on par with the previous series, but medium and coarse wools gave way further and must now be quoted 10 per cent below January.

The third series of sales, which commenced on the 11th April, was adjourned for Easter, from 19th April to 2d May, and closed May 5:

The net total available amounted to 95,000 bales.

There was a good attendance all through with an increasingly confident tone. Prices began hardening almost from the start, but only reached their maximum after the fortnight's Easter recess, the trade doubtless beginning to realize the probability of short supplies for the remainder of the year.

Merino grease opened fully on a par with the previous sales and at the close good greasies are 10 per cent, topmakers' wools from 15 to 20 per cent, over March.

Scoureds, which in the early days of the series sold at March parity, likewise improved their position steadily. The best wools now show an advance of fully 10 per cent, medium 15 per cent, and inferior 20 per cent, over the previous sales.

Fine crossbreds opened on a par with last series, but now rule 5 per cent over March. Medium wools at first showed a fall of 5 per cent, but soon recovered and now stand fully 5 per cent over last sales' level. Coarse wools, which opened without change, closed 5 per cent dearer.

Among Capes, greasy combing wool opened with a 5 per cent rise, but is now from 10 to 15 per cent dearer, while short grease is 5 per cent over March. Snow whites, in small supply, have sold at about 5 per cent advance.

The fourth series of London sales of Colonial wool, which commenced on May 30 closed June 8:

The net total available amounted to 70,000 bales.

The sales were well attended and the tone was firm.

The net result of this series, as far as merino is concerned, is a further rise of from $7\frac{1}{2}$ to 10 per cent. Greasy wools, both good and ordinary, opened with a rise of $7\frac{1}{2}$ per cent, and now stand 10 per cent above the previous level, except for short wools which are only 5 per cent over April-May values.

The salient feature of these sales is that the recent high level for merino wool has again been materially exceeded and a fresh record established. Some extraordinary prices were realized —

45½d. for Queensland scoured fleece, 45d. for broken, and 36½d. for locks. Two well-known Queensland brands actually averaged nearly 42½d. for whole shipments, including locks.

Crossbreds have shown little change from the previous sales. Only the finer wools are 7½ per cent dearer, while medium and coarse remain on a par with April-May, and in the case of shabby lots often barely reach that level.

The fifth series of London sales of Colonial wool commenced on July 11 and closed July 28:

The net total available amounted to 109,000 bales.

Speaking generally the net result of this series has been a slight advance in the average value of merino and a slight decline in that of crossbred.

Merinos, both greased and scoured, opened with a rise of 5 per cent and for a time strengthened their position still further, but during the second week extreme prices were no longer maintained and at the close values again rule on the average at 5 per cent above the previous sales, while the rise is even more marked in well-grown topmakers' grease and in bulky scoured.

Fine crossbreds, in sympathy with merino, at first moved up 5 per cent, but soon lost the advance and are now on a level with the close of the June sales. Medium and coarse wools opened at from par to 5 per cent decline, and at one time were fully 5 per cent cheaper, but are now back at the opening quotation.

The sixth series of London sales of Colonial wool which commenced on September 5, closed September 22:

The net total available amounted to 106,000 bales.

There was a good attendance and competition was general, but the tone was at times rather hesitating in consequence of the general uncertainty as to future Government policy and of the increasing labor shortage.

Superior merino grease of good staple has again hardened this series, and may be quoted 5 per cent over July, but the bulk of ordinary grease wool is unchanged, while faulty and inferior grease is 5 per cent easier. Scoureds, after the first week, have shown considerable irregularity. Really superior lots, as well as ordinary average wools, have fallen 7½ per cent, while all faulty inferior scoureds must be quoted 15 per cent down.

Greasy crossbreds have been in strong demand and have sold on the average at 5 per cent over July rates. Scoured crossbreds, on the other hand, are quite 5 per cent easier, faulty lots meeting with little or no demand owing to combing difficulties. Slipes are the turn dearer.

The seventh series of London sales of Colonial wool, which commenced October 2, closed November 24:

The net total available amounted to 109,000 bales.

There was a good attendance and excellent competition, prices hardening steadily as the sales progressed, and reaching their highest point at the close.

There has again been a substantial advance in all classes of wool. Among merinos good shafty grease at first showed a rise of from $7\frac{1}{2}$ to 10 per cent, but continued to harden till it now stands at 15 per cent over September level. Ordinary grease showed an initial advance of 5 per cent, but is now also 15 per cent dearer, while short faulty wools, which opened with an advance of 5 per cent, are now 10 per cent over September. Scoureds, both superior lots and ordinary wools, rose 5 per cent at first, but are now 10 to 15 per cent over the previous sales.

Some very extreme prices were realized, perhaps the most notable being 2s. 9 $\frac{1}{2}$ d. for Geelong grease and 4s. 5d. for Sydney scoured. Among crossbreds the finer qualities opened with an advance of from 5 to $7\frac{1}{2}$ per cent, but for these too, the rise is now 10 to 15 per cent. Medium and coarse wools sold at first from par to 5 per cent advance but, in consequence of rumors as to Government action in New Zealand, rose sharply towards the close and now also stand 10 to 15 per cent over last series.

Among Capes snow whites sold at first at an advance of 5 per cent, but have hardened all the time, and are now 10 to 15 per cent dearer. Long Cape grease was hardly represented, but short grease, which opened well on a par with the previous series, stands at the close 10 per cent above that level.

The eighth series of London sales of Colonial wools commenced December 14 and closed on the 20th.

The list closed November 27 with new arrivals of 144,345 bales, of which 122,759 were Australian and 21,586 Cape. There were available 90,000 bales of which 38,000 were sold and 52,000 held over till the next year.

Messrs. Schwartze, Buchanan & Company say:

Owing to the purchase of Australian and New Zealand clips by the government and the many complicated questions arising therefrom, these sales were postponed from the 5th to the 14th of December and 34,000 bales can be offered in the old year. All sales sent to London on pastoralists' account were ruled out for the moment.

This brief series was characterized by very keen competition and both merinos and crossbreds advanced fully 10 per cent.

Of the 39,000 bales offered 19,000 were crossbreds.

The following statement shows the supplies and deliveries of Colonial wool as compared with the season of 1915 :

London Market.	1916.	1915.
Supplies :	<i>Bales.</i>	<i>Bales.</i>
Held over from December	10,000	20,000
Net imports	726,000	1,056,000
	<u>736,000</u>	<u>1,076,000</u>
Sales :		
Home Consumption..... 627,000	903,000	
Continental " 55,000	86,000	
American " 2,000	77,000	
	<u>684,000</u>	<u>1,066,000</u>
Total sold of first-hand wools,		
Held over.....	52,000	10,000

The following statement shows the quantity available and the sales at each series :

LONDON SALES — SERIES OF 1916 — BALES.

	Available.	Sold to —			Total Sales.	Held Over.
		England.	Continent.	America.		
	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>
Jan. 1, 1916.....						10,000
Jan. 18–Feb. 5...	122,000	100,000	15,000	2,000	117,000	5,000
Feb. 29–March 17.	96,000	77,000	8,000		85,000	11,000
April 19–May 5...	95,000	82,000	6,000		88,000	7,000
May 30–June 8...	70,000	57,000	5,000		62,000	8,000
July 11–July 28 ..	109,000	90,000	7,000		97,000	12,000
Sept. 5–Sept. 22..	106,000	90,000	6,000		96,000	10,000
Oct. 24–Nov. 10 ..	109,000	95,000	6,000		101,000	8,000
Dec. 14–24.....	90,000	36,000	2,000		58,000	52,000
		<u>627,000</u>	<u>55,000</u>	<u>2,000</u>	<u>684,000</u>	

The total deliveries decreased 309,000 bales. The sales in London of first-hand wools were 628,000 bales of Australasian and 56,000 bales of Cape wools, a total of 684,000 bales as shown in the previous table. Last year these sales amounted to 1,066,000 bales of which 1,008,000 were from Australasia and 58,000 from the Cape.

The direct purchases for the two years compare in bales as follows :

	English Consumption Forwarded Direct.	Foreign Consumption.		Total Direct Purchases.
		Forwarded via England.	Direct.	
1915.....	1020	95	505	1620
1916.....	757	13	923	1693

Adding the transit wools and direct imports, the total deliveries of Colonial wools to the trade for this year and last compare as follows :

TOTAL SEASON.		
	1916. <i>Bales.</i>	1915. <i>Bales.</i>
Home Consumption.....	1,384,000	1,923,000
Continental	273,000	212,000
American	720,000	551,000
Total.....	2,377,000	2,686,000

LIVERPOOL EAST INDIA WOOL SALES.

Messrs. Hughes & Isherwood report the quantity of wool offered and the sales with its disposition to the continent and the home trade for the five series of 1916 as follows. There were apparently no sales for the American market.

Feb.-March.	May.	July.	Sept.-Oct.	Nov.-Dec.	Bought by
.....	.....	.....	.....	.....	America.
260	690	340	1,100	400	Continent.
56,311	43,618	36,968	44,610	35,139	Home trade.
56,571	44,308	37,308	45,710	35,539	Total sold.
3,917	6,848	4,900	10,547	2,833	Withdrawn.
60,488	51,156	42,208	56,257	38,372	Bales offered.

Messrs. Buxton, Ronald & Co., as usual, present their Review of the Colonial wool year from October 1 to September 30, inclusive,

covering eight series of sales, seven of which were held in the current year, the other being the eighth and last of the sales for the year 1915. A few extracts covering the most important features of the year's business follow :

Sales. — Auctions on eight occasions during the twelve months have disposed of 732,000 bales, distributed thus :

Home Trade.	Continent.	United States.
<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>
643,000	71,300	17,700

leaving about 11,000 bales to go forward to the next year.

Prices :

Merinos are now about 45% higher than a year ago.

Crossbreds, Fine qualities..... “ “ “ 25% “ “ “ “ “

“ Medium “ “ “ “ 15% “ “ “ “ “

“ Coarse “ “ “ “ 15% “ “ “ “ “

The total imports between the 24th July, 1915, and the 21st August last, when the list of arrivals for the September sales was closed, amounted to 1,527,649 bales, against 1,994,163 bales during the previous year, thus resulting in a decrease of 466,514 bales, or over 23 per cent.

Australasian. — Taking it all round, the clip was poor, but in some cases a better article had been grown than in the previous season. West Australian wools showed up well. The market rose gradually throughout the year, and thus it happens the highest prices have not been made by the best wools.

South African. — The catalogued quantity, 55,658 bales, shows an increase of eleven to twelve thousand bales. It would have been better for South African wool growers' pockets had more advantage been taken of the prices which were afforded by this market. Towards the end of the season South African wools attracted attention which they have never before received, proving worthy substitutes for Australian merinos.

Weather conditions had evidently varied very much in different districts. Many of the Free State wools were thin and tender.

The market for short wools has been irregular, and we see no reason to alter the advice which we gave twelve months ago, viz., to limit the production of this class of wool as much as possible and to grow the longer staple. Basutos and Transkeis have been used in increasing quantities by manufacturers. Snow white has sold increasingly well all through, but at the finish there was a reaction from the very high levels previously established.

British East African. — There was some slight increase in the quantities offered. The wools were mostly in better condition and, what is more to the point, much more in favor with buyers.

All along they met with a very ready market; 1s. 5d. was the top price.

The New Zealand clip was just about equal to the average. There was a rapid and well pronounced rise just about the turn of the year, high water mark being reached at the January sales. Prices for medium and coarse wools declined appreciably at the March auctions. From thence on the market remained fairly steady. Buyers were much upset during the summer months by the Government's action in buying up the British clip, as they feared that values of the Colonial article would be affected injuriously. This, however, did not happen, hence during the autumn the demand improved.

Striped Wools. — The quantities catalogued were the largest on record. Several new brands appeared in the catalogues, and with scarcely an exception a high standard of excellence was achieved.

1916.	1915.	1914.	1913.	1912.	1911.
<i>Bales.</i> 87,000	<i>Bales.</i> ¹ 49,000	<i>Bales.</i> ² 56,000	<i>Bales.</i> 75,000	<i>Bales.</i> 70,000	<i>Bales.</i> 60,900

¹ Exclusive of about 12,000 bales sold privately.

² Exclusive of about 26,000 bales sold privately.

AUSTRALIAN 60s TOP.

The following are the quotations for an average super 60s top as reported by Messrs. Buxton, Ronald & Co. for the past five years :

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>	<i>d.</i>
1912.	24 $\frac{1}{2}$	24	24 $\frac{1}{2}$	24 $\frac{1}{2}$	25	25	26 $\frac{1}{2}$	26 $\frac{1}{2}$	26 $\frac{1}{2}$	26 $\frac{1}{2}$	27	28 $\frac{1}{2}$
1913.	28	29 $\frac{1}{2}$	29 $\frac{1}{2}$	29 $\frac{1}{2}$	29 $\frac{1}{2}$	29	28 $\frac{1}{2}$	28 $\frac{1}{2}$	28 $\frac{1}{2}$	28	27 $\frac{1}{2}$	26
1914.	27	28 $\frac{1}{2}$	29	29	30	30 $\frac{1}{2}$	30	30	26	30	30 $\frac{1}{2}$	25
1915.	25 $\frac{1}{2}$	28	31 $\frac{1}{2}$	31 $\frac{1}{2}$	34	42	43	39 $\frac{1}{2}$	38	36	39	42 $\frac{1}{2}$
1916.	43	44 $\frac{1}{2}$	42	42	45 $\frac{1}{2}$	49 $\frac{1}{2}$	51	52 $\frac{1}{2}$	52 $\frac{1}{2}$	52 $\frac{1}{2}$	—	—

RIVER PLATE WOOLS.

As was the case a year ago our records for the River Plate are particularly meager. The report of Messrs. Wenz & Company, containing their estimates of the shipment and the production of

Argentine and Uruguayan wools is lacking, but Messrs. Hartmann Brothers of Boston, have supplied Mr. Hamilton Coffey's report, giving the shipments for a twelve months' period for a series of years and his figures for the last two years have been added to the table of Messrs. Wenz & Company, thus presenting a complete record since 1905. Messrs. Wenz & Company's reports cover only what they call the "wool year"—that is, from July 1 to May 1 of the succeeding year. Mr. Coffey's figures are for the twelve months ending September 30 in each year.

SHIPMENTS OF RIVER PLATE WOOLS BETWEEN JULY 1 AND APRIL 30
SUCCEEDING, 1905 TO 1916 INCLUSIVE.¹

In thousands of bales.

Year.	Dunkirk.	Havre.	Antwerp.	Hamburg. Bremen.	England.	United States.	Italy.	All Other.	Total.	Of which from Monte- video.
1905	135	6	50	129	28	41	3	27	419	74
1906	140	24	50	134	36	30	4	28	446	84
1907	135	13	56	103	43	24	4	23	401	71
1908	127	16	54	94	45	14	5	14	369	64
1909	202	5	67	123	57	48	8	32	542	122
1910	134	13	56	115	33	31	9	31	422	107
1911	125	5	49	112	49	18	8	31	397	87
1912	94	5	56	112	47	26	9	26	375	105
1913	94	6	47	121	70	28	14	35	415	135
1914	93	10	52	108	44	41	12	42	402	117
1915 ²	.....	2	.....	.....	78	118	93	86	377	73
1916 ²	1	12	.....	.....	33	163	65	70	344	44

¹ Wool circulars of Wenz & Co., Reims, to 1915.

² Report of Mr. Hamilton Coffey, Buenos Aires.

Of these wools 162,330 bales or nearly one-half were sent to the United States, all but 10,000 of which came from Argentina.

The next table contains a statement of the production of River Plate wools for a period of twenty years, beginning October 1, 1895, and closing September 30, 1915. The report for the year 1916 has not yet come to hand.

WOOL PRODUCTION OF ARGENTINA AND URUGUAY.

SEASON (October 1 to Septem- ber 30).	ARGENTINA.			URUGUAY.			GRAND TOTALS.		
	Quan- tity.	Ave. weight, Bales.	Total weight.	Quan- tity.	Ave. weight, Bales.	Total weight.	Quan- tity.	Ave. weight, Bales.	Total weight.
	<i>Bales. a.</i>	<i>Kilo. b.</i>	<i>Metric Tons. a. c.</i>	<i>Bales. a.</i>	<i>Kilo. b.</i>	<i>Metric Tons. a. c.</i>	<i>Bales. a.</i>	<i>Kilo. b.</i>	<i>Metric Tons. a. c.</i>
1895-96.....	443,0	380	168,3	100,0	466	46,6	543,0	396	214,9
1896-97.....	486,0	412	200,3	88,0	466	41,0	574,0	420	241,3
1897-98.....	495,0	417	206,5	90,0	466	42,0	585,0	424	248,5
1898-99.....	487,0	425	207,2	81,0	469	38,0	568,0	431	245,2
1899-00.....	465,0	429	199,4	85,0	470	40,0	550,0	435	239,4
1900-01.....	405,0	445	181,0	86,5	471	40,8	491,5	451	221,8
1901-02.....	444,0	445	197,6	86,0	470	40,4	530,0	449	238,0
1902-03.....	481,0	412	198,4	104,0	471	49,0	585,0	422	247,4
1903-04.....	416,0	420	174,7	86,0	470	40,4	502,0	428	215,1
1904-05.....	411,0	417	171,2	82,5	472	38,9	493,5	425	210,1
1905-06.....	395,0	417	165,0	90,5	450	40,7	485,5	423	212,9
1906-07.....	389,0	417	162,2	99,0	454	44,7	488,0	424	206,9
1907-08.....	427,0	417	178,0	110,0	460	50,6	537,0	426	228,6
1908-09.....	438,0	415	182,0	126,0	459	57,8	564,0	425	239,8
1909-10.....	359,0	413	148,4	123,0	458	56,4	482,0	424,8	204,8
1910-11.....	394,0	409	161,0	134,5	458	61,6	528,5	421	222,6
1911-12.....	361,0	409	147,7	155,5	458	71,2	516,5	424	218,9
1912-13.....	310,0	407	126,0	142,0	458	65,0	452,0	409	191,0
1913-14.....	306,0	417	127,6	119,0	466	56,0	e 425,0	432	183,6
1914-15.....	314,0	381	119,5	104,0	436	45,0	f 418,0	394	164,5

Add for local consumption, 1912-13, 16,800 bales; 1913-14, 14,500 bales, and 1914-15 10,000 bales.

a. Two 00 omitted, thus 443,0 = 443,000.

b. Kilo equals 2.2046 pounds.

c. Metric ton equals 2,204.6 pounds.

e. Add 14,500 bales for home consumption.

f. Add 10,000 bales for home consumption.

The following tables present the imports into the United States of these wools for a series of years. It will be noticed that they have very largely increased especially from Argentina, where the imports of Class I wools have grown from an average of over 28 millions of pounds for the previous ten years to 111 millions in 1916, and those of Class III amount to over 14 millions of pounds or nearly double the average for the same period.

IMPORTS OF ARGENTINE WOOLS INTO THE UNITED STATES FOR THE YEARS
1905-1916 INCLUSIVE.

Fiscal Year.	Class I.	Class II.	Class III.	Total.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
1905.....	41,094,617	362,562	41,094,617	47,695,567
1906.....	36,352,480	.....	5,815,447	43,167,927
1907.....	19,247,683	94,866	3,852,659	23,195,208
1908.....	14,311,508	.....	1,909,787	16,221,295
1909.....	51,601,420	106,239	6,672,175	58,379,834
1910.....	27,331,068	37,799	3,713,317	31,082,184
1911.....	14,014,295	96,326	3,780,755	17,891,376
1912.....	23,049,591	.....	4,572,037	27,621,628
1913.....	24,393,428	.....	2,349,156	26,742,584
1914.....	36,301,837	396,980	5,577,725	42,276,542
1915.....	67,076,718	90,212	10,641,323	77,808,041
1916.....	111,253,529	3,239,552	14,670,272	129,163,353

IMPORTS OF URUGUAYAN WOOLS INTO THE UNITED STATES FOR THE FISCAL
YEARS 1905-1916 INCLUSIVE AS SHOWN BY REPORTS OF UNITED STATES
DEPARTMENT OF COMMERCE.

Fiscal Year.	Class I.	Class II.	Class III.	Total.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
1905.....	7,044,752	619,377	76,180	7,740,309
1906.....	5,083,195	.....	3,995	5,807,190
1907.....	5,856,437	.....	174	5,856,611
1908.....	1,604,221	.....	.....	1,604,221
1909.....	5,759,852	.....	108,380	5,868,232
1910.....	8,768,627	.....	21,158	8,789,775
1911.....	711,525	.....	.....	711,525
1912.....	3,125,759	.....	91,229	3,216,988
1913.....	3,537,824	.....	181,049	3,718,873
1914.....	11,639,243	41,949	1,336,526	13,017,718
1915.....	16,561,154	18,334	18,135	16,597,623
1916.....	8,858,492	245,090	405,164	9,508,746

THE AUSTRALIAN WOOL MARKETS.

(Extracts from Dalgety's Review.)

Striking and unusual as were the events of the first year of the present titanic struggle, when chaos came upon the wool trade and months of stagnation and anxiety were slowly superseded by a gradual re-building process evolving into an exceptional war demand and culminating in a boom level of values,

they pale into insignificance in their results when compared with the achievements of the second year of the war, which is synonymous with the 1915-16 season. The recent campaign, however, was not without its periods of crisis, when the fate of the market appeared to tremble in the balance, when anxiety overshadowed optimism, and when a false step might have meant disaster to growers' interests. The critical stages were, happily, surmounted, and the market rose triumphant, values soaring to a height never previously experienced since the Australian wool industry arrived at maturity. Results achieved have been truly wonderful, with an era of prices which will cause the record of the past season to rank in wool trade history up to the present time as the most successful and most remarkable yet known.

The previous season closed with wool values favorable to producers, and with every promise of particularly satisfactory returns for the reduced clip that was inevitable. There was, however, an element of the greatest danger existent in the fact that the great bulk of the 1914-15 clip had gone to the United Kingdom, either in the form of direct shipments to the manufacturing centers or in consignments for sale in London. Serious congestion was inevitable, and it was not slow in manifesting itself, constituting a danger to values standing where they did. Not only was there insufficient labor available to unload and handle the wool as it arrived at the London docks, but storage facilities, large as they admittedly are, proved altogether inadequate to the abnormal demand. There were considerable delays in unloading vessels, difficulties in getting the wool out for sale, and further difficulties in conveying it to manufacturing centers after sale, and never before in its long history was the London trade forced to work under such hampering conditions. In addition to the big weight of wool offering and stored in London, heavy arrivals of direct purchases in Australasia poured in on the trade, and relief only came when the restrictions surrounding exports were lessened and the balance of surplus wool was reduced.

AMERICAN COMPETITION.

The enormously increased volume of American purchases was undoubtedly the predominant feature of the past wool season and the shipments constitute a record never previously approached. The shipments were made subject to arrangements with the Textile Alliance that no wool nor any wool tops or yarn made therefrom should be exported to any destination from the U.S.A., and it was recently officially stated that the British Embassy at Washington having made the fullest investigation, was thoroughly satisfied that the spirit as well as the letter of the agreement had been honorably carried out.

A HELPFUL FACTOR.

One aspect of the position affords a striking contrast with that existing at this time last year, and that is that practically the whole of the main part of the late clip (so far as Australian sales were concerned) was cleared by the end of March. Selling in the 1914-15 season was delayed so much by the war in the earlier stages and by the dispute with wool buyers in the later stages that a heavy legacy of wool (amounting to about 200,000 bales) had to be carried forward, and it was not until the end of July that the auction sales were finished, and even then it was a month or six weeks more before all the private sale wools were realized.

RESULTS TO PRODUCERS.

Prices have been steadily improving all through the season, and those who were called upon to exercise the most patience in waiting for the sale of their wool reaped the highest rewards. There was a very material difference between opening and closing rates for the main selling season, and if prices were generally satisfactory at the start they were gratifying indeed at the finish. Earlier rates, although acceptable enough, did not compensate growers for their decreased output, but later prices were on such a level as to make up in many cases for the smaller number of bales.

With greasy wool selling in hundreds of cases at twenty pence per pound and over, and scoured wool at thirty pence to forty-four pence farthing per pound, the market was one that will not soon be forgotten. Prices were good before the Christmas recess, so good that growers who were forced to wait until the New Year to realize were full of grievances, and the position was accentuated by the unfortunate dislocation in Victoria, owing to the strike of storemen and the shipping scarcity. As a result of these factors more wool was carried over to the New Year than would otherwise have been the case. The delay proved a veritable blessing in disguise, for despite the fact that insurances and freights — already extremely high — were materially increased, prices improved substantially when sales re-opened in the New Year and further strengthened each week as the season advanced.

EXTRAORDINARY WAR CONDITIONS.

That the results which have been obtained for producers during the past season have been made possible by the extraordinary conditions created by the war goes without saying. There is no doubt, however, that the careful system of regulating supplies has been largely responsible for turning the opportunities of the moment into account and the securing of the best results. To realize this we have only to think for a moment what the

conditions would certainly have been had there been no restriction on the volume of offerings early in the season. Yorkshire users were uncomfortably loaded with supplies and London was congested. While the American and Italian competition was sufficient to absorb the limited offerings, indiscriminate selling would undoubtedly have prevented the upward movement which afterwards occurred, and would have played into the hands of the "bears." No doubt owners in many instances would have chafed at the delay in offering when prices were good, but they were amply recompensed for any delay in the enhanced values secured later on, and the great majority of wool growers frankly acknowledge that the work done by the associated selling brokers of Australasia since the war has been of incalculable value to their interests.

AUSTRALIA'S STAPLE PRODUCT.

So far as pastoral conditions generally are concerned, they might be better; but they might easily be worse. When the season opened the drought had broken practically everywhere except in Queensland and the northwest of New South Wales, where it was protracted. Relief eventually came, but not before the flocks had sustained heavy losses and production had been seriously lessened. The losses of the past drought have, however, been so severe that it will be a few years, under even favorable circumstances, before production can be materially increased. It was sheep that first made Australia famous, and it has been our sheep flocks which have produced the great bulk of the wealth which has flowed to Australia, and everything should be done to stimulate and expand, rather than hamper and curtail such a vital factor in Australian prosperity.

THE YIELD PER SHEEP.

The position of the woolgrower has in many instances not been as satisfactory as the general high level of values would naturally lead one unconnected with the industry to expect. To make this clear we may take the case of an owner who in November last secured 14½d. per pound for his first fleece. Previously he had never received more than 12d. per pound, so that the 14½d. would naturally create visions of prosperity. As we have often emphasized, the price per pound is no criterion of the net results to the owner. In this particular case the owner the previous season sold his wool up to 11½d. and his sheep netted him 5/3 per head, whereas during this season, although he received 14½d. per pound, his sheep have only netted him 4/9 per head. The explanation is that the season was dry and the wool was light, and his sheep only cut an average of 8 pounds, as against 10½ pounds in the previous season. Thus the increased price in this, as in many other instances, did not compensate for the reduced weight.

THE WOOL REVENUE.

The outstanding fact in connection with the past season's wool clip is that 1,807,979 bales, out of the total Australian production (for export) of 1,994,656 bales, averaged £16/10/10 per bale, grossing £29,903,532. Basing the value of the remaining 186,677 bales shipped to the London market at the same average as that realized for the portion of the clip sold in Australasia, there is an additional sum of £3,087,949. These two amounts together make the total value of the 1915-16 clip (for export) £32,991,481.

The difference shown in the wool revenue for the two seasons, 1915-16 and 1913-14, is not very great, and both may be regarded as eminently satisfactory. If similar returns can be secured for the 1916-17 season production, growers will have every reason to be more than pleased with the value realized for their wool.

AMERICAN BUYING.

One of the features of the Australian selling season has been the activity of the American section of buyers, who have accounted for a large quantity of wool. For a lengthened period they were only permitted to handle merino wools, but later on, when the embargo was lifted, they were just as keen competitors for cross bred, and it was largely due to their spirited buying that prices rose in the way they did. The position was, of course, exceptional in every way. With a free-wool tariff and an extraordinary activity in manufacturing circles, there was a keen incentive to buy largely, and the ever-present fear that the embargo might be applied at any moment intensified the desire to get all the wool they could in the shortest possible time. In June the embargo against shipment to neutrals put an end for the time being to American buying.

JAPANESE DEMAND.

The Japanese section of buyers has given very consistent support to the market, and the variety and volume of buying by Eastern operators have been of material assistance in handling the clip. The year has been a good one for the Japanese houses, and prospects are bright for further extension of trade with the East. The wool-using industry in Japan is now on a sound basis, and the opportunities presented by the war have been fully availed of.

FREIGHT AND INSURANCE.

In January last the oversea shipping companies announced that in order to attract tonnage to Australia they found it necessary to substantially increase the outward and homeward freights, and fixed the freight to London on greasy wool at 1 $\frac{7}{16}$ d. per pound,

plus $7\frac{1}{2}$ per cent and 20 per cent war surtax, and on scoured wool $1\frac{1}{16}$ d. per pound, plus $7\frac{1}{2}$ per cent and 20 per cent war surtax.

In July, 1914, prior to the war, the rates of freight were 3/4d. per pound on greasy wool and 7/8d. per pound on scoured, and insurance ruled at 7/6 per cent.

COMPARISON OF WOOL VALUES.

An interesting comparison is afforded of the position of crossbred at the lowest point of recent years, the beginning of the war, and in December, 1915, viz. :

Description.	Nov.-Dec., 1901.	July, 1914.	December, 1915.
	<i>d.</i>	<i>d.</i>	<i>d.</i>
Slip half-bred combing lambs	6	$17\frac{1}{2}$	26
Slip crossbred, 1st combing lambs	$4\frac{1}{2}$	$15\frac{1}{2}$	24
Slip crossbred, 2d combing lambs.....	$4\frac{1}{2}$	$14\frac{1}{2}$	22
Slip crossbred, 1st combing	$6\frac{1}{4}$	14	23
Slip Lincoln, 1st combing.....	5	—	$20\frac{1}{2}$
Slip three-quarter bred, combing	$5\frac{1}{2}$	13	21
Slip crossbred, combing	$4\frac{1}{2}$	$12\frac{1}{2}$	20
Slip crossbred, stained pieces	$3\frac{1}{2}$	$8\frac{1}{4}$	16
Slip crossbred, clothing.....	4	$9\frac{1}{2}$	$16\frac{1}{2}$

DEMAND AND DISTRIBUTION.

The American buying was really wonderful, and has no equal in history. It reflects the improved American manufacturing conditions due to the war orders, and lessened foreign competition in supplying domestic requirements. To a lesser, but appreciable extent, the position was held by Japanese and Italian buying, and throughout the season some solid support was received from these sections. France was able to help moderately, and local users throughout the season proved valuable supporters to the market.

THE YEAR'S TRADE.

The year 1915 ranks as the period of the most extraordinary activity the English wool trade has ever known. At the close of 1914, merino prices had eased, and, with an embargo against exports, even to neutrals, in force, the outlook was not promising. During 1915, however, there was a steady and almost continuous hardening of prices for both classes. Early in the year, exports of merinos were permitted to neutrals under satisfactory guarantees, with an immediate effect on values. France took a fair quantity. Russia, later on, took a big weight of wool, and Italy, upon joining the Allies in May, gave considerable orders

for army purposes. The Home demand exceeded anticipations, and the placing of Government hosiery orders in America helped to create an inquiry beyond all precedent from that quarter which took prices to unexpected heights. At the close of the year, merinos were fully 50 and crossbreds 30 per cent above the level of December, 1914. The Home trade took about 72 per cent of the supplies, as compared with the ordinary normal share of about 35 per cent. That the English textile industry should have been able to more than double its output was perhaps the most astonishing feature of an astonishing year, though the production of large quantities of one particular kind of cloth, without pattern, and made from a grade easy in the working, greatly facilitated production.

It was pointed out by Mr. Henry Dawson during the course of a lecture on "The Romance of Wool in War Time," that it was estimated that one-third of the wool supply was being sold for military requirements of the men under arms. In other words, 33 per cent of the wool was being required for less than 1 per cent of the population, two-thirds being left for the remaining 99 per cent of civilians. There had never been too much wool for the world. It had always consumed whatever sorts were grown, and with a big decrease in production, we may look for a demand in excess of supplies during the war period.

DESTINATION OF PURCHASES.

The distribution of purchases in the Australian and New Zealand markets, from particulars furnished by buyers, is given as follows:

Destinations.	1915-16.		1914-15.	
	Bales.	Per Cent.	Bales.	Per Cent.
United Kingdom.....	742,178	41	983,355	64
France	57,345	3	58,706	4
Belgium and Holland .....	.....	..	5,459	..
Germany and Austria .....	.....	..	8,439	1
Italy and Switzerland	166,916	10	68,436	4
Russia, Norway, and Sweden..	7,422	..	1,466	..
United States and Canada	564,433	31	234,896	15
Japan, China, and India.....	113,611	6	81,890	5
Local Manufacturers, etc.....	156,074	9	102,152	7
	1,807,979	100	1,544,799	100

GREAT BRITAIN'S WOOL IMPORTS.

We are, fortunately, able to give a comparison of the wool imports of Great Britain a century ago, as compared with 1915. The figures are very interesting. In 1815, the great bulk of the wool imported was from Spain, Germany, and other parts of Europe, which have long since ceased to figure as wool-exporting countries. The figures in 1815 are given in pounds, and totalled 13,593,959 pounds, as compared with an import during 1915 of 2,161,441 bales for Australasia and the Cape. If, for the purpose of making the comparison clearer, we take a rough average of 300 pounds to the bale, we have a grand total for 1915 of 648,432,300 pounds. The figures are as follows:

GREAT BRITAIN'S IMPORTS IN 1815.

	<i>Pounds.</i>
From Spain	6,927,934
From Germany	3,137,438
From other parts of Europe	3,416,132
From South America.....	45,830
From Cape of Good Hope.....	23,363
From Australia.....	32,971
From other parts	10,291
Total.....	13,593,959

GREAT BRITAIN'S IMPORTS IN 1915.

	<i>Bales.</i>
From New South Wales.....	516,839
From Queensland.....	251,936
From Victoria.....	292,336
From Tasmania	21,313
From South Australia.....	86,020
From Western Australia	73,845
From New Zealand	554,701
Total Australasian....	1,796,990
Cape	364,451
	2,161,441

equal to 648,432,300 pounds of wool at 300 pounds to the bale.

PROPOSED EXPORT TAX ON WOOL.

The recent proposals of Mr. H. Dawson, principal of the firm of Messrs. H. Dawson & Company, that an export tax should be imposed on wool in England has naturally caused a good deal of discussion. Mr. Dawson took up the attitude that both neutral and enemy countries should be called upon after the war to pay a tax upon coal and wool, which he claimed were the capital of the British Empire, and which the outside world could not do without. It is self-evident that such a tax to be effective must

be an Empire one. To impose one in Great Britain alone would simply amount to driving away trade. It must necessarily be imposed in Australia, New Zealand, and South Africa simultaneously with Great Britain. The proposal thus becomes a wide one and conflicts with the general policy of all producing countries, which is that nothing shall be done to hamper or restrict the world's competition.

The wool growing view of an export tax is distinctly antagonistic, because all export taxes mean, as already put forward, that the producer pays them. The buyer adds the tax to his costs and bases his limits accordingly, and the grower gets that much less for his wool.

CONTINENTAL WOOL TRADE.

The Trade of Mazamet.

The following table shows the exports and imports into the district covered by the Mazamet Chamber of Commerce :

EXPORTS.

	1915.	1914.
	Kilos.	Kilos.
Woolens } Worstedes } Flannels }	1,672,768	1,956,842
Washed wool	20,191,885	9,308,769
Hosiery	225,455	335,598

IMPORTS.

	1915.	1914.
	Kilos.	Kilos.
Sheepskins	31,329,205	38,736,947
Greasy wool	4,189,272	1,114,821

The operations of the Mazamet Conditioning House were less in 1915 than in 1914, but in 1915 3,621,000 kilos of wool were washed for war purposes. The Conditioning House has been choked, and buyers have had to be content to take conditioning returns on only small portions of their purchases. The figures for the two years are as follows :

1915.

	For Military.	For the Trade.	Total.
Clean scoured	3,621,000	9,088,601	12,709,601
Washed .....	.....	2,501,384	2,501,384
Yarn .....	.....	1,678	1,678
Weighing only.....	.....	245,245	245,245
			15,457,908

1914.

	For Military.	For the Trade.	Total.
Clean scoured	65,000	5,844,385	5,909,385
Washed .....	.....	14,555,916	14,555,916
Yarn .....	.....	9,909	9,909
Weighing only.....	.....	214,026	214,026
Total	65,000	20,624,236	20,689,236

CROSSBRED *vs.* MERINO.

It has been our custom for a number of years past to devote considerable prominence to the comparative position of crossbred and merino wool production, a question of vital importance to both producing and consuming interests. The steadily increasing production of crossbred which has been noted has been attributed to the rise and expansion of the frozen-meat trade, which has been the great determining factor of the position.

From a wool buyer's point of view the cry has been for fine merinos, and, indeed, many buyers have frequently taken exception to the inroads of crossbred on merino wool production. They have pointed out that it was the fine woolled merino of Australia, surpassing in excellence that of any other country in the world, which made the Australian wool industry possible, and have urged that the main consideration should always be the production of fine merino wool.

On the other hand, the frozen-meat industry has led to a steady increase in crossbred sheep. This trade in its inception was merely regarded as a means of fighting against gluts of sheep, and was found to be impossible on such lines, because those concerned in starting it took into consideration the exigencies of sheep owners, irrespective of market demands for meat. It was found that to develop the frozen-meat industry it was primarily essential to study the demands of consuming countries as regards

weight and quality of carcass, and that being done, material progress was made. Thus, the frozen-meat export trade, whilst achieving the object of preventing the possibility of gluts of sheep, rose from being a secondary consideration with sheep men to a position of primary importance. It presented increased avenues of wool production, possessing enormous potentialities. The first and main consideration of weights of carcasses and quality of meat having been brought in line with consumers' ideas, it became necessary to combine with meat production the most desirable type of wool possible on meat animals, and this has been the aim of breeders for years, resulting in the evolution of a type of crossbred wool in general demand.

TABULAR STATEMENTS.

From this and previous reports the following statements and tables have been prepared :

NUMBER OF SHEEP AT CLOSE OF YEAR IN AUSTRALASIA, 1911-1915.

	1915.	1914.	1913.	1912.	1911.
New South Wales	33,009,033	36,287,000	39,842,518	39,436,118	45,032,022
Victoria	10,545,632	12,051,685	12,113,682	11,892,224	12,857,804
Queensland	16,107,225	23,129,919	21,786,600	20,248,580	20,387,838
South Australia	3,674,547	4,208,461	5,073,057	5,481,487	6,267,477
West Australia	4,831,727	4,471,941	4,418,402	4,593,458	5,408,583
Tasmania	1,613,139	1,862,600	1,862,600	1,800,000	1,788,310
Australia and Tasmania . .	69,781,303	82,011,606	85,096,859	83,451,867	92,742,034
New Zealand	24,607,868	24,465,526	24,595,405	23,750,153	24,269,620
Total	94,389,171	106,477,132	109,692,264	107,202,020	117,011,654

PRODUCTION, EXPORTS AND SALES.

The following tables show the Australasian wool exports and sales, the exports by states, and the principal countries of export:

AUSTRALASIAN EXPORTS AND SALES.

Season.	Total Exports.	Sales.	Sales to Exports.
	<i>Bales.</i>	<i>Bales.</i>	<i>Per cent.</i>
1898-9	1,664,517	890,185	53
1899-0	1,594,464	915,877	57
1900-1	1,609,713	808,912	50
1901-2	1,664,885	1,035,520	62
1902-3	1,440,722	861,174	60
1903-4	1,366,942	837,497	61
1904-5	1,595,734	1,092,651	68
1905-6	1,869,455	1,354,865	72
1906-7	2,090,188	1,537,798	74
1907-8	2,057,831	1,351,121	66
1908-9	2,288,104	1,657,906	72
1909-10	2,434,643	1,889,745	77
1910-11	2,468,750	1,865,167	76
1911-12	2,537,867	1,926,926	76
1912-13	2,247,265	1,804,801	80
1913-14	2,527,463	1,968,578	78
1914-15	2,137,702	1,544,797	72
1915-16	2,129,915	1,807,979	85

AUSTRALASIAN WOOL EXPORTS BY STATES.

States.	1915-16.		1914-15.	
	Net Weight.		Net Weight.	
	<i>Bales.</i>	<i>Pounds.</i>	<i>Bales.</i>	<i>Pounds.</i>
New South Wales....	840,515	267,283,770	731,218	242,033,158
Victoria	342,476	104,112,704	391,626	118,662,678
Queensland	258,122	80,275,942	268,120	89,283,960
South Australia.....	92,654	28,815,394	101,536	31,476,160
West Australia	73,564	22,142,764	65,306	19,657,106
Tasmania	11,928	3,315,984	17,882	5,078,488
Commonwealth	1,619,259	505,946,558	1,575,688	506,191,550
New Zealand.....	510,656	181,282,880	562,014	197,266,914
Australasia.....	2,129,915	687,229,438	2,137,702	703,458,464

The distribution of purchases in Australasia in the past two seasons has been as follows:

AUSTRALASIAN WOOL SALES, DISTRIBUTION.

	1915-16.		1914-15.	
	Bales.	Per Cent.	Bales.	Per Cent.
United Kingdom.....	742,178	41	983,355	64
Continent.....	231,683	13	142,506	9
United States and Canada.....	564,433	31	234,896	15
Japan, China, and India.....	113,611	6	81,890	5
Local manufacturers, etc.	156,074	9	102,152	7
	1,807,979	100	1,544,799	100

THE AVERAGE WEIGHT OF FLEECE.

The following statement shows for a period of sixteen years the number of fleeces per bale and the number of bales to the 1,000 sheep:

Year.	No. of Sheep and Lambs' Fleece per Bale.	No. of Bales per 1,000 Sheep.
1900-1.....	55.88	17.89
1901-2.....	55.42	18.04
1902-3.....	51.36	19.46
1903-4.....	55.51	17.99
1904-5.....	52.70	18.97
1905-6.....	50.27	19.89
1906-7.....	49.65	20.13
1907-8.....	51.72	18.97
1908-9.....	47.79	20.92
1909-10.....	46.49	21.51
1910-11.....	47.	21.27
1911-12.....	44.37	22.54
1912-13.....	45.91	21.69
1913-14.....	41.56	24.06
1914-15.....	43.97	22.74
1915-16.....	44.31	22.56

THE VALUE OF THE AUSTRALASIAN WOOL PRODUCT.

The total value of the 1,807,979 bales sold in Australasia during the past season has been £29,903,532 or an average of £16, 10s. 10d. per bale; and if that portion of the clip which has been sent direct to London for sale has made a like average, the net gain in wealth to Australasia from wool alone will have amounted to

£32,994,934 for 1915-16, as compared with
 £30,942,158 for 1914-15,
 £33,478,353 for 1913-14,
 £30,684,531 for 1912-13,
 £29,581,874 for 1911-12,
 £31,588,936 for 1910-11,
 £33,128,496 for 1909-10,
 £25,950,912 for 1908-09,
 £26,768,952 for 1907-08, and
 £29,685,740 in 1906-07.

VALUE OF THE AUSTRALASIAN CLIP, 1891-1915.

Calendar Year.	Total Value Wool Exports.	Calendar Year.	Total Value Wool Exports.	Calendar Year.	Total Value Wool Exports.
	£		£		£
1891.....	24,063,227	1906.....	29,685,780	1911.....	29,581,874
1901.....	18,936,557	1907.....	26,768,952	1912.....	30,684,531
1902.....	16,109,026	1908.....	25,950,912	1913.....	33,478,353
1903.....	18,042,873	1909.....	33,128,496	1914.....	30,942,158
1904.....	21,796,096	1910.....	31,588,936	1915.....	32,994,934
1905.....	25,203,549				

THE WORLD'S SHEEP AND THE WOOL PRODUCT.

The following tabular statement contains the most recent official figures and the best estimates available of the number of sheep in the several countries. It must not be taken as an exact statement because even where official figures are given, sometimes lambs and sometimes goats are included and there is no way of determining how many of either are reported.

In the European countries the figures, in most cases, are for years prior to the present war. When the facts are obtainable it will be found that the flocks have been largely reduced and in many cases practically destroyed. The table shows simply the numbers at the latest dates recorded, and will be useful for reference.

NUMBER OF SHEEP IN THE WORLD ACCORDING TO THE LATEST AVAILABLE
REPORTS AND ESTIMATES.

Country.	Year.	Number of Sheep.
NORTH AMERICA :		
United States: Continental.....	1917	¹ 48,483,000
Noncontiguous, except Philippine Islands:		
Hawaii .....	....	76,719
Porto Rico.....	....	6,363
Alaska .....	....	199
Total United States.....		48,566,281
Canada	1916	1,965,101
Newfoundland .....	....	97,597
Mexico	1902	3,424,430
Guatemala.....	....	514,000
Other Central America.....	....	124,044
Cuba .....	....	9,982
British West Indies.....	....	27,980
Dutch " " .....	....	22,643
Guadeloupe.....	....	11,731
		6,197,503
Total North America.....		54,763,789
SOUTH AMERICA :		
Argentina	1912	83,545,931
Brazil	1913	10,653,000
Bolivia	1910	1,454,729
Chile.....	1914	4,602,317
Colombia .....	....	746,000
Uruguay	1908	26,286,296
Venezuela .....	....	177,000
Falkland Islands .....	....	705,000
Other South America .....	....	300,000
Total South America.....		128,470,273

¹ Includes lambs.

NUMBER OF SHEEP IN THE WORLD, ETC. — *Continued.*

Country.	Year.	Number of Sheep.
EUROPE :		
Austria Hungary	1910-13	12,337,867
Belgium .....	....	235,722
Bulgaria	1910	8,632,388
Denmark, Iceland, and Faroe Islands	1914	1,246,000
Finland .....	....	1,309,000
France	1916	12,079,211
Germany	1915	5,073,478
Greece .....	....	3,547,000
Italy	1908	11,162,926
Montenegro .....	....	400,000
Netherlands .....	....	842,000
Norway .....	....	1,398,000
Portugal	1906	3,072,988
Roumania	1911	5,269,493
Russia in Europe	1914	42,736,000
Saxony .....	....	58,185
Servia	1910	3,818,997
Spain	1913	16,441,407
Sweden	1912	988,000
Switzerland	1912	161,000
Turkey	1910	21,190,000
United Kingdom, including Isle of Man, etc.	1915	27,964,000
All other Europe .....	....	20,000
Total Europe		179,983,662
ASIA :		
British India :		
British Provinces	1914	23,091,955
Native States	1914	8,306,000
Total		31,397,955
Ceylon	1913	64,000
Cyprus	1912	265,000
Japan	1912	3,357
Philippine Islands	1913	103,000
Russia in Asia	1912	33,331,000
Turkey in Asia	1912	27,094,678
Other Asia .....	....	60,000
Total		60,921,035
Total Asia		92,318,990

NUMBER OF SHEEP IN THE WORLD, ETC. — *Concluded.*

Country.	Year.	Number of Sheep.
AFRICA :		
Algeria	1912	8,338,023
Basutoland .....	....	1,369,000
British East Africa .....	....	6,550,000
German East Africa	1913	6,439,647
German South West Africa	1912	555,000
Madagascar	1911	168,000
Rhodesia	1911	300,000
Soudan (Anglo-Egyptian)	1909	830,000
Tunis	1914	1,119,000
Uganda Protectorate	1914	542,000
Cape of Good Hope } Natal } Orange Free State } Union of Transvaal } South Africa }	1913	35,710,843
All other Africa .....	....	3,000,000
Total Africa		64,921,533
OCEANIA :		
Australia	1915	69,781,303
New Zealand	1915	24,607 868
Total Australasia		94,389,171
Other Oceania .....	....	10,000
Total Oceania		94,399,171
Total World		614,857,418

The number of sheep in the world as above reported shows a decrease of about 18,000,000, of which the unfavorable season in Australia accounts for 12,000,000.

The total number reported one year ago was 633,897,658 against 614,857,418 at the present time.

WOOL PRODUCTION OF THE WORLD.

COUNTRY.	WOOL.
	<i>Pounds.</i>
North America:	
¹ United States	288,490,000
British Provinces	11,210,000
Mexico	7,000,000
Total North America.....	306,700,000
Central America and West Indies.....	750,000
South America:	
Argentina	264,500,000
Brazil.....	35,000,000
Chile	20,000,000
Peru.....	9,420,707
Falkland Islands.....	3,200,000
Uruguay.....	143,293,000
All other.....	5,000,000
Total South America.....	480,413,707
Europe:	
Austria-Hungary.....	41,600,000
France.....	75,000,000
Greece.....	16,000,000
Germany	25,600,000
Italy.....	21,500,000
Portugal.....	10,000,000
Russia in Europe.....	320,000,000
Spain.....	52,000,000
Turkey and Balkan States	90,500,000
United Kingdom.....	121,200,043
All other.....	30,000,000
Total Europe.....	803,400,043
Asia:	
British India.....	60,000,000
China.....	50,000,000
Persia	12,146,000
Russia in Asia	60,000,000
Turkey in Asia	90,000,000
All other	1,000,000
Total Asia.....	273,146,000
Africa:	
Algeria.....	33,184,000
British Africa	157,761,470
Tunis.....	3,735,000
All other	13,000,000
Total Africa.....	207,680,470
Oceania:	
Australia and Tasmania.....	463,750,000
New Zealand	181,282,880
Total Australasia	645,032,880
All other.....	100,000
Total Oceania.....	645,132,880
Total world.....	2,717,223,100

¹ Estimate of the U. S. Department of Agriculture.

WOOL PRODUCTION OF THE WORLD.

What is said above of sheep applies with equal or greater force to the table of wool production. The United States, the United Kingdom, and Australasia, are the only countries from which reliable statistics are available at present.

The world's wool production as computed for 1915 was 2,836,519,134 pounds, and this year it is 2,717,223,100, showing a decrease of over 119,000,000 pounds as estimated, but it is doubtless true that the production of Central Europe, Russia, and Turkey must be considerably smaller than the quantities credited. Unfortunately there are no present means of ascertaining the facts.

WILLIAM J. BATTISON.

TEXTILES — THE BACKBONE OF NEW ENGLAND.

AN ADDRESS BEFORE THE BOSTON ART CLUB.

By MR. FRANKLIN W. HOBBS,

President of the Arlington Mills of Lawrence.

By special invitation of the Boston Art Club, Mr. Franklin W. Hobbs, president of the Arlington Mills of Lawrence, delivered an address before the club and its guests on Saturday evening, December 9, on the theme, "Textiles — The Backbone of New England." Mr. Hobbs was introduced by Hon. Samuel L. Powers, the president of the club, and spoke before a large gathering representative of the business and professional life of Boston and its neighborhood. His address was as follows:

Some one has said that language was given us to conceal our thoughts. It is also said that a preacher takes a text so that no one may know what the sermon really is to be about, so to-night, although I have taken for a text, "Textiles — The Backbone of New England," I shall not confine myself entirely to the "backbone," for, while that part of the anatomy is most essential, perhaps it is not the most interesting. In other words, I shall first call your attention to the great importance of the textile industry to New England, a matter little appreciated by the average man, and then briefly consider some of the social and economic phases of the industry.

In the space of this address it will be impossible more than briefly to touch on a few important points in the history of textiles. There is, however, no subject more interesting or more romantic than the story of textiles, running back to the earliest human records. The advance in textiles has marked the course of human progress in all lands, and step by step has reached the present wonderful state of development.

THE BEGINNINGS.

The textile industry had its beginning in New England soon after the Bay State Colony was founded. The Great and General Court (as the Legislative Body officially is called) passed an order on May 13, 1640, to encourage manufacturing, and this is believed to be the first official reference to textiles in New England.

In 1643 a fulling mill was started at Rowley, near Ipswich, Mass., and this was the first cloth mill built in the United States. In a book published in London in 1664, reference is made to the fact that the people employed "were the first people that set upon making cloth in this Western world." They apparently made "Cloath and Rugs of cotton wool and also sheep's wool."

The first worsted mill was established in 1695 by John Cornish, a comber, weaver, dyer, and fuller, who lived in Boston. He had two combs, four looms, and two dye furnaces and a fulling mill apart from the rest of the property. The spinning was done by various farmers, to whom he furnished the hand-combed wool or top, and they spun it into yarn for him.

The first actual mill for the manufacture of cotton was started in Beverly, Mass., in 1787, and the production of cotton goods at that mill was carried on at least a year before Samuel Slater began manufacturing in his mill in Pawtucket. This mill was visited shortly afterwards by President Washington and referred to in his diary. Manufacturing had been greatly stimulated by the action in 1786 of the Massachusetts Legislature, which passed some bills attempting to encourage the business.

At the time when Alexander Hamilton wrote his famous "Report on Manufactures" in 1791, he referred to certain branches of the textile industry already established in this country. There was, however, only one cotton factory where spinning was carried on by machinery moved by water power, and that factory had a total of 72 spindles! The looms were still run by hand, as the first power looms were introduced by Francis Lowell at Waltham in 1816. Some progress was made

during the next fifteen years, but it was not till the War of 1812 and the embargo which preceded it cut off foreign commerce that cotton manufacturing was really "established."

According to the late Royal C. Taft, the first woolen mill in the United States which was successfully operated by power was started in Byfield, Mass., in 1794, by John and Arthur Scholfield, who came there from Yorkshire, England.

The first cotton mill in the world where all the processes of manufacture were carried on in one plant by power was that of the Boston Manufacturing Company, built in Waltham, Mass., in 1813. Previous to that time the different processes of carding, spinning, and weaving were done in separate establishments in both England and America. This mill marked a great step and change in the industry.

CONDITIONS IN EARLY DAYS.

Some years ago the late Hon. Moses T. Stevens presented me with a copy of the "Minutes of Evidence taken before the Committee on Manufactures, First Session of the Twentieth Congress," which was ordered printed January 31, 1828, and which he found in the office of the old Marland Mills in Andover, after he purchased the property.

In this report of the hearing is printed the testimony of my great grandfather, Abraham Marland, who was a woolen manufacturer in Andover, Mass., at that time, and who founded the mills bearing his name. My object in calling your attention to this testimony to-night is simply to show you the changes that have been made with reference to wages and hours of work in the past ninety years. Under his testimony, I quote from the book:

Question: What number of hands are employed in your factory? What are their descriptions — as men, women, boys, and girls; and what wages are paid for their services?

Answer: I believe I employ about 70 hands in my factory beside myself. About 30 are men, who are paid wages which will average \$1 each per day. About 14 or 15 are women, who are paid the average wages of from \$2.25 to \$2.50 per week; the residue are boys and

girls from 8 to 12 years of age, who are paid the average wages of 25 cents per day; except about 10 apprentices, who are paid about \$130 per year. The above prices, in each instance, include board. The above includes my hired help of every kind. Myself and two sons do all the superintendence ourselves.

Question: What are the usual working hours of the hands in your factory?

Answer: In the summer time we work 12 hours over and above the time allowed for meals, and we fall but little short of that in the winter.

In the same book is printed the testimony of Hon. Aaron Tufts of Dudley, in Worcester County, Mass.:

Question: What are the usual working hours of the hands in your factory?

Answer: In the summer they usually work from sunrise until sunset, except when at their meals, which consume about 1½ hours. This continues about six months. During the other six months they usually work from sunrise in the morning until eight o'clock in the evening, allowing the same time as before for meals.

There are many others who gave most interesting testimony as to business conditions, profits or rather losses, hours of labor, and wages, all practically along the same lines.

In passing, however, it may be of interest to many of you who know Dr. S. N. D. North, for many years the honored Secretary of the National Association of Wool Manufacturers, to add that there appears the testimony of Simon N. Dexter of New York, Mr. North's grandfather, and for whom he was named. There is also the testimony of Eleuterre Irenee Dupont of New Castle, near Wilmington, Del., one of the early members of the now famous family of that name.

We get here a glimpse of the conditions in the early days of the wool manufacturing of the country and the small beginning it had. How different from those prevailing to-day! And yet they were the strong and successful men of their day, the representatives of a struggling industry. If you will pardon the personal allusion, I know of no more forceful way to show the development of the industry

than this: My great-grandfather then testified that in 1827 he "manufactured about 51,000 pounds of wool," and his mill for those days was a fair-sized and very successful one. The mill with which I am connected now consumes that amount of wool *every five hours day and night*. Having in mind the constant progress of the industries of the world, I wonder what our great-grandchildren will say some day about us!

We cannot, however, take the time to consider the gradual growth of the industry, its successes and failures, its hopes and disappointments. We find the story strewn with wrecks and it is a wonder that the early manufacturers kept on as they did. Few survived the panics, the changes in tariffs, the lack of skilled operatives, and the lack of capital. It is a tribute to the indomitable courage and determination of such pioneers that to-day we have the really great textile industry of the country, of which New England is the center.

THE BACKBONE.

Now, leaving the interesting and most hastily touched-upon history of textiles, let us confine ourselves for a few minutes to the subject matter of the text — "Textiles — The Backbone of New England." By backbone I mean these industries are the bone and sinew, they provide the life blood, the homes, the cities, and make New England what it is. Without them and the industries directly and indirectly supported by them New England would be impossible to imagine.

Let us examine the statistics:

According to the United States Census of 1909 (the last figures available) the total product of *all* industries in New England was valued at \$2,670,065,000; the capital engaged amounted to \$2,505,854,000; the number of employees was 1,101,290 and the wages paid \$557,631,000.

The total value of *textile* products in New England was \$743,489,000; the capital engaged amounted to \$745,528,000, the number of employees was 370,026 and the wages paid \$158,249,000.

As it is hard to take in such figures, let me repeat them in a different way :

FOR NEW ENGLAND.

	All Industries.	Textile.	Per Cent of Textiles.
Product	\$2,670,065,000	\$743,489,000	28
Capital.....	2,505,854,000	745,528,000	30
Wage earners.....	1,101,290	370,026	34
Wages	557,631,000	158,249,000	28

The detailed figures for the textile industry of New England are as follows :

	Capital.	Value of Product.	Cost of Materials.	Number of Wage Earners.	Wages Paid.
Wool manufacture, including woolens, worsteds, felts, carpets, and wool hats	\$276,126,000	\$288,460,000	\$184,676,000	113,074	\$50,986,000
Shoddy manufacture . . .	1,969,000	2,090,000	1,391,000	540	247,000
Cotton manufacture . . .	323,690,000	316,541,000	173,032,000	189,604	77,236,000
Silk manufacture	31,027,000	34,589,000	20,452,000	14,497	6,377,000
Cordage and twine, linen, etc.	18,181,000	17,450,000	11,805,000	7,105	2,689,000
Fur felt hat manufacture, 9,406,000		14,146,000	6,781,000	7,441	4,374,000
Hosiery and knit goods . 27,231,000		30,992,000	16,223,000	19,175	7,422,000
Dyeing and finishing textiles	57,898,000	39,411,000	17,268,000	18,590	8,918,000
	\$745,528,000	\$743,679,000	\$431,628,000	370,026	\$158,249,000

The principal industries of New England with the value of their products are reported as follows :

Textile industries	\$743,489,000
Boots and shoes	289,950,000
Foundry and machine shop products	187,012,000
Paper and wood pulp	97,470,000
Lumber and timber.....	81,602,000
Printing and publishing	63,203,000
Slaughtering and meat packing.....	53,287,000
Leather and leather goods	49,257,000
All other.....	1,104,795,000

Total \$2,670,065,000

From this you will note that while the products of the textile industries, as already stated, are 28 per cent of the total, the next industry is the "Boots and Shoes," which amounts to only 11 per cent of the whole. So that while the boot and shoe industry is a most important one in New England, it is really of less value than the cotton manufacture and exceeds the value of the manufactures of wool by only \$13,000,000 and is only a little over one-third in value as compared with the combined textile industry.

It is also of interest to note in this connection that the value of the products of the textile industries in New England is 43 per cent of the total of these industries in the entire United States—the figures for New England being \$743,679,000 and for the United States \$1,732,501,129; in number of wage earners 41 per cent, the number in New England being 370,026 and in the whole country 906,192. That is to say, almost one-half of all the textile fabrics made in the United States are made right here in our busy and productive little corner of the country.

The chief branches of textiles of New England are rated as to value of their products as follows :

Wool manufacture	39 per cent.
Cotton "	43 " "
Silk "	5 " "
Cordage, twine, etc.....	2 " "
Fur-felt hats, etc.....	2 " "
Hosiery and knit goods	4 " "
Dyeing and finishing	5 " "

100 per cent.

They represent the investment of \$745,000,000 of capital and a product of \$744,000,000; they give employment to 370,000 of our people, and they pay out in wages each year the sum of \$158,000,000. It must be borne in mind also that all these figures are based on those given in the Census of 1909, and that on to-day's basis they would be much larger. This is especially true of the amount paid in wages of which the rates have been increased during the year 1916 nearly 30

per cent, a greater increase in a given time than ever known before.

These figures include only what is strictly under the head of textiles. They do not include many other industries which exist largely on account of the textiles. You are all familiar with the great textile machinery plants all over New England; boiler makers, engine builders, electric power apparatus manufactures, belting, shafting, coal, wood, iron, and numberless manufactures, which are simply here to supply the needs of all the textile mills in New England, and of course in other parts of the country, too. It is true, however, that the reason they are here and that their operatives are here in New England is because textiles are here. Then, too, there are the great raw material markets here for wool and cotton. Boston is the greatest wool market in the United States and there is more real cotton sold here than in any other city. The selling agencies of many mills are here also. We must also consider what the textile mills mean to the transportation lines of New England. The freight charges for bringing in the raw materials and supplies and delivering the finished products make a great part of the revenues of our railroads and steamboat lines, and without such revenues they would be most seriously crippled. So we see that while textiles represent nearly one-third of the industries of New England, we must consider them not alone, but in connection with other allied industries and occupations, and when we so consider them I think you will fully agree with me that they are indeed the "backbone" of industrial New England and worthy of all proper encouragement by every one interested in continuing their development and maintaining New England's lead in this respect.

It is also well to remember what an advantage these mills possess as industrial savings banks. The stockholders are composed largely of women and trustees. An investigation I made a few years ago with reference to cotton mills showed that 55 per cent of the stock of the cotton mills in New England was held by such persons, and I have no doubt the same situation holds true in other lines. These small hold-

ings often represent the savings of a lifetime of people who, by thrift and economy, have saved a little money and invested in a local mill, upon the success of which depends the very existence of the community in which it runs. The very large number of stockholders in these enterprises indicates that capital is a collective noun as much as labor, and it is a well-known fact that many names on the payroll also appear on the stock ledger of the same corporation. The textile mills really give large numbers of people a chance to make individually small investments, and in that regard are a great benefit to the community and should be encouraged in all reasonable ways by local, state, and national legislation. It is well to remember the vital importance of the textile industry to the great number of stockholders, to the greater number of employees, and to the unknown numbers who are indirectly dependent on it for their livelihood, and always to bear in mind that anything that affects the "backbone" brings about most serious troubles in the entire body. In other words, we of New England must use every effort to foster and maintain the great textile industry which is so vital to our welfare and success, more so than to any other part of our country.

THE FACTORY SYSTEM.

The textile manufacture of to-day in New England, as elsewhere, is carried on, of course, in relatively large plants, by great organizations. The household industry of colonial days has passed away in New England, as it practically has in the really progressive manufacturing nations of the world. There are those who look upon this change with regret as a loss of something picturesque, and so it may be, just as the tide-mills and the windmills have given way before the advance of steam and electricity.

But the picturesque is not all there is in life. The factory system may have brought some evils, but it has brought many more abounding benefits. For one thing, it has very greatly and tremendously reduced the cost of fabrics that are neces-

sary to the comfort of all the people. If the woollen, cotton, and silk cloths and dress goods of to-day were to be manufactured on the old hand loom, the cost per yard would be prohibitive.

While it is generally supposed that the "factory system" is a modern institution, there apparently is a record of what may well be called the forerunner of the factory system in England in the business carried on in Newbury by John Winchcombe, who died in 1520. He became famous all over England and at one time entertained Henry VIII. and his wife, Catherine, at his place. An old poem written at the height of his fame describes the place as follows:

Within one room, being large and long,
There stood two hundred looms full strong;
Two hundred men, the truth is so,
Wrought in these looms all in a row;
By every one a pretty boy
Sat making quills with mickle joy.
And in another place hard by
A hundred women merrily
Were carding hard with joyful cheer
Who singing sat with voices clear;
And in a chamber close beside
Two hundred maidens did abide.

.
These pretty maids did never lin
But in their places all day did spin!

.
Then to another room came they
Where children were in poor array,
And every one sat picking wool,
The finest from the coarse to cull;
The number was seven-score and ten,
The children of poor silly men.

Within another place likewise
Full fifty proper men he spied,
And these were shearmen every one
Whose skill and cunning there was shown!

.
A dye-house likewise he had then
Wherein he kept full forty men;
And also in his fulling mill
Full twenty persons kept he still.

So we find in England nearly four hundred years ago this forerunner of what we call the factory system.

Time will not permit me to consider its gradual growth and development, but to those who are interested I commend a book entitled, "Some Ethical Phases of the Labor Question," by the late Carroll D. Wright.

I had the privilege of intimate acquaintance with him, and doubtless many of you had a similar privilege. There was probably no man in the country who had made a wider investigation into industrial problems and labor conditions than this man, who was a former United States Commissioner of Labor, Secretary of the Coal Strike Commission appointed by President Roosevelt, and, at the time of his death, President of Clark College, Worcester.

With all his rare abilities as an investigator, statistician, and student, he happily combined the unusual quality of common horse-sense, which made his work so valuable.

I wish to quote from his book a few ideas which he expressed in words far better than I can command. He wrote :

It is simple fact, however, when we say that the factory system set aside the domestic system of industry. It is idyllic sentiment when we say that the domestic system surpassed the former, and nothing but sentiment.

There is something poetic in the idea of the weaver of old England, before the spinning machinery was invented, working at his loom in his cottage, with his family about him, some carding, others spinning the wool or the cotton for the weaver; and writers and speakers are constantly bewailing the departure of such scenes.

I am well aware that I speak against popular impression and largely against popular sentiment, when I assert that the factory system in every respect is vastly superior as an element in civilization to the domestic system which preceded it; that the social and moral influences of the present outshine the social and moral influences of the old. The hue and cry against the prevailing system has not been entirely genuine on either side of the Atlantic. Abuses have existed, great and abominable enough, but not equal to those which

have existed in the imagination of men who would have us believe that virtue is something of the past.

The domestic laborer's home, instead of being the poetic one, was far from the character poetry has given it. Huddled together in what poetry calls a cottage, and history a hut, the weaver's family lived and worked, without comfort, conveniences, good food, good air, and without much intelligence. Drunkenness and theft of materials made each home the scene of crime and want and disorder. Superstition ruled and envy swayed the workers. If the members of a family endowed with more virtue and intelligence than the common herd tried to so conduct themselves as to secure at least self-respect, they were either abused or ostracized by their neighbors. The ignorance under the old system added to the squalor of the homes under it, and what all these elements failed to produce in making the hut an actual den was faithfully performed, in too many instances, by the swine of the family.

The spasmodic nature of work under the domestic system caused much disturbance, for hand working is always more or less discontinuous from the caprice of the operative, while much time must be lost in gathering and returning materials. For these and various obvious reasons a hand weaver could very seldom turn off in a week much more than one-half what his loom could produce if kept continuously in action during the working hours of the day, at the rate which the weaver in his working paroxysms impelled it.

The regular order maintained in the factory cures this evil of the old system, and enables the operative to know with reasonable certainty the wages he is to receive at the next pay day. His life and habits become more orderly; and he finds, too, that, as he has left the closeness of his home shop for the usually clean and well-lighted factory, he imbibes more freely of the health-giving tonic of the atmosphere. It is commonly supposed that cotton factories are crowded with operatives. From the nature of things, the spinning and weaving rooms cannot be crowded.

My position is that the system has been and is a

most potent element in promoting civilization. I assume, of course—and the assumption is in entire harmony with my thoughts—that the civilization of the twentieth century will be better than that of the eighteenth and nineteenth.

We hear a great deal about the sweating system, and the popular idea is that the sweating system is the product of modern industrial conditions. The fact is that it is a remnant of the old industrial system. It is the old hand system prior to the establishment of the factory, and has been projected into our time. Once universal, the sweating system is now limited to one or two industries, and is gradually being eliminated through the very system which is sometimes condemned. Just as fast as the sweatshops are developed into the factory, and brought under the laws which relate to factory regulation, just so rapidly is the sweating system being eliminated. The only cure is to make of the sweatshop the factory. The social life of sweaters can be improved only by lifting them to the grade of factory operatives. An examination into the conditions existing under the factory system, and those of the domestic or individual system which preceded it, fully sustains this position.

In the above words, Dr. Wright has stated many truths which are but little understood and appreciated. He has opened a subject too great for a thorough discussion this evening. I have taken the opportunity merely to suggest to your minds what I believe to most of you is a new viewpoint, and I hope it may lead you to look into the whole subject and, as a result, you will better understand the facts.

CONDITIONS OF HEALTH.

There have been many misstatements and popular misconceptions with reference to the question of health in the textile cities. The Hon. Jacob H. Gallinger, Senator of the United States from New Hampshire, who was an experienced and eminent physician before he entered Congress, made a very able address in the Senate Chamber on September 2, 1913, and devoted a large part of his speech to this very question.

Speaking with reference to the large death rate of children under five years of age in textile cities, he stated that it "is undoubtedly true in some cases, but I cannot see how the manufacturers can be held responsible for it. It is barely possible that the sanitation and water supply of these cities may have something to do with the high death rate; and, again, it is an undeniable fact that in these communities some of the working people themselves are largely responsible for the condition of health which prevails among the children. They are largely foreigners, coming recently from Southern Europe, and bringing with them the insanitary and careless conditions that prevail in those countries. While they receive wages that would enable them to live comfortably, in some cases they herd together, eat poor food, and neglect all the laws of health, their sole purpose being to accumulate enough money to enable them to return to their own country and live in comparative luxury. Thousands of them accomplish this."

In taking up the general subject of death rate in manufacturing cities Senator Gallinger called attention to the following:

Mortality in New Hampshire Cities.

It is especially interesting to note the fact that the general mortality for New Hampshire cities, which includes the mortality of children under five years of age, is favorable to the textile communities. As an illustration, Concord, the capital of the State, where my colleague and I both reside, a residence city with practically no manufacturing industries, had in 1910 a death rate of 21.6, and in 1911, 20.1; while Manchester, Nashua, Dover, and Laconia, all of which are textile cities, had death rates as follows: Manchester, 1910, 16.5; 1911, 18.2; Nashua, 1910, 17.7; 1911, 16.3; Dover, 1910, 17.8; 1911, 18.7; and Laconia, 1910, 18.3; 1911, 14.7; all considerably below the death rate of Concord. It will be observed that in some of these cities the average death rate has fallen, while in others it has risen; but no one of them shows as large a death rate as Concord, where manufacturing is almost entirely unknown. It is proper that I should say that the death

rate of Concord is somewhat augmented by the abnormal death rate in one of the State institutions located in that city.

Mortality Statistics for Massachusetts.

Turning to the State of Massachusetts, which is the most distinctively textile State of New England or the Union, leading in both cotton and woolen manufactures, the following facts appear: The four chief textile manufacturing centers of this State are Fall River, Lowell, New Bedford, and Lawrence. These are all populous communities in which, as in other industrial centers of New England and the country, a large proportion of the people are of foreign birth.

It is true, of course, that the rate of mortality is greater in these densely-inhabited cities than it is in most of the country towns, and somewhat larger than the rate of mortality in the State at large, which was 15.42 per 1,000 in 1911. In that same year the death rate in the textile city of Fall River was 17.5 per 1,000, in the textile city of Lowell 17.7 per 1,000, in the textile city of New Bedford 17 per 1,000, and in the textile city of Lawrence, which has been pictured as a horrible example of destitution and suffering, the death rate was 16 per thousand, only a fraction above the average death rate in the State. But in that same year, 1911, the death rate in the non-textile seaport of Boston was 17.1 per 1,000, and in the seaport of Salem 16.7 per 1,000. In Chelsea, a commercial city on the shore of Boston Harbor, the death rate was 19.3 in the same year, being 3.3 higher than the death rate in Lawrence. These figures compare densely-populated textile communities with densely-populated non-textile communities, and they go far to disprove the assertion that any particularly high mortality attaches to textile manufacturing. These are the records of the forty-third annual report of the State Board of Health of Massachusetts, published in 1912.

Tuberculosis.

If there is any malady that might be assumed to be peculiar to textile communities, it is tuberculosis. But the mortality from this disease in the four chief textile centers of Massachusetts, taken as a whole, is lower than in the State at large. The sixty-first annual report of births, marriages, and deaths in Massachusetts states that

the mortality from tuberculosis in the whole Commonwealth in the year 1910 was 1.3 per 1,000, this figure including, of course, a very large number of agricultural, thinly-populated towns. But in the same year the same authority states that the death rate from tuberculosis in Fall River, a textile city, was 1.3 per 1,000, the same rate as in the State at large, while the tuberculosis death rate in New Bedford, Lowell, and Lawrence, all textile cities, was only 1.1 per 1,000. In these textile centers a great majority of the working population are employed in the cotton and woolen mills, and it is a most remarkable fact, as shown by these official figures, that textile workers, as a whole, suffer less from tuberculosis than do the people of Massachusetts in general.

Pneumonia.

It has been shown that the death rate from tuberculosis in the textile cities in Massachusetts is even less than the general death rate for the State. It will now be interesting to observe that the report of the Bureau of the Census for 1911 shows that the death rate from pneumonia in Massachusetts was 1.6 per 1,000, while in Fall River the rate was 1.9, New Bedford 1.8, Lowell 1.4, Lawrence 1.9, Manchester 1.8, and Boston 2. From this it will be seen that in Lowell the death rate was lower than in the State at large, while all the textile cities mentioned had death rates from pneumonia below that of the non-textile city of Boston, but slightly above the rate for the entire State.

The laws of Massachusetts, which are in many respects the most advanced in the country, require in the public schools 300 cubic feet of air space per pupil and ventilation furnishing 30 cubic feet of fresh air per minute per pupil. In a mill with which I am connected (and there are many others with equally good conditions) there are 3,000 cubic feet of air space per operative and the ventilating system furnishes 50 cubic feet of fresh air per minute per operative. You will note that the mill furnishes ten times the space and nearly double the amount of fresh air required by law for the school children. One of the State medical inspectors told me that, after many years' experience, he would state unhesitatingly

that it was a fact beyond question that the hygienic conditions in many Massachusetts mills are better than those in any schoolhouse in the State. And yet, many well-meaning, but misinformed people claim that a textile mill is an unhealthy place for men and women to work in. I suggest that for a time our philanthropists and politicians turn their attention to the conditions existing in the homes of the people and make some serious effort to improve them and to bring them in some measure at least up to the standard which has long been maintained inside our mills.

ACCIDENTS IN INDUSTRIAL WORK.

So also with accidents in manufacturing establishments. I know that the popular assumption is that nearly all of these accidents are due to the peril inherent in the running of machinery, perhaps especially textile machinery, but such an impression is contrary to the facts. Most of these accidents are due, not to the machinery, but to the personal or human factor. The truth is that accidents most commonly happen, not to persons engaged in operating machinery, but to those engaged in manual labor.

The reports of the Massachusetts Industrial Accident Board, relating to the cotton industry in this State alone, forcibly illustrate these facts. Out of all accidents reported to the Board for the period July 1, 1913, to July 1, 1914, there were 7,787 accidents to employees in cotton mills. Eleven were fatal, but only two of the fatalities were caused by moving machinery; 2,062, more than 26 per cent, happened to those engaged in strictly hand labor; 160 were injured when handling trucks; 307 were hurt by protruding nails; 147 by glass; 172 received serious infections from slight scratches or cuts; 153 suffered from burns; 87 fell down stairs; 509 fell while walking on floors; 98 fell from ladders and scaffolds; 11 were injured by animals; 313 sustained injuries to the eyes; and 412 received injuries from various sources. These few items total 4,431 injuries, which show that in cotton mills in Massachusetts 57 per cent of all

the injuries had nothing to do with machinery and of the 43 per cent the majority were due to the personal carelessness of those who worked about the machinery. Mr. Magnus Alexander, of the General Electric Company, a former member of the Board, has made a special study of this entire subject and at the last meeting of the National Association of Cotton Manufacturers delivered a most interesting address on "Industrial Caution the Most Effective Accident Preventive." His investigation shows that only one-third and usually only one-fourth of all industrial accidents could be prevented by the most complete safeguarding of all machinery, belts, chains, pulleys, etc. So that while we all agree that every safeguard should be provided, he has clearly shown, and it is the general experience of all who know the facts, that the possibility of preventing accidents in that way is very limited indeed. In this connection, Mr. Alexander said:

But, as we consider the actual, underlying causes of accidents, and in each case endeavor to apply mechanical guards which might be utilized to prevent the recurrence of similar accidents, we realize the futility of the effort, for it is apparent that it is largely in the hands and heads of the individual workmen, and not in the appliances or objects with which, or the conditions under which, they are working. What kind of safeguard could we erect around a man who trips over his own shoe-lace; who carelessly drops a monkey wrench on a man on the floor below; who wears a loose necktie or other loose clothing where it may wind about a spindle or shaft; whose judgment is so dull that he continues to use a machine that is obviously dangerous; whose sense of responsibility is so meager that he will throw a box at the foot of a stairway or into a dark passage; who strikes a match in a room filled with inflammable vapor; who pokes a man in the ribs when he is working around swiftly-running machinery, or who shakes a ladder with a man on it "just for fun"? These are occurrences of our daily life. Do we pretend to guard against all this by mechanical safeguards? No. We should just as little pretend that we can guard against all the injuries that occur in industry by mechanical safeguards, because, after all, they

arise from the same commissions and omissions. Is it not clear, then, that the majority of all accidents have their chief source in a spirit of carelessness? Much industrial enterprise is attended with hazards that are inseparably connected with it. Much machinery must be used continually which cannot be made fool-proof from safety standpoint. Even if it were possible it would be unwise so to surround red-blooded human beings with safeguards as to convert them into such unthinking mollicoddles, while in the shop, that they would rush thoughtlessly into the very jaws of danger from Ford automobiles and other sources the moment they step from the shop into the street.

I have thus briefly quoted from Mr. Alexander's admirable address. I have no doubt these statements will surprise you, for the popular idea has been that nearly all accidents in manufacturing are due to moving machinery, and that if proper safeguards were used there would be no more accidents. As the facts are so different, it seemed well to call your attention to them. It is well to realize that in this and other matters we cannot reform human nature by legislation. And it is the human element that is the chief cause of accidents. That is the underlying idea in the "Safety First," or, as they put it in New York, "Safety Always," movement. It is an attempt to lead the public in the right way, to caution each individual to choose the safe way, and not to rely so much on "fool-proofing" as on care and common-sense. In that way we shall gradually reduce the number of accidents, and far more effectively, than by any other means.

CONTRIBUTIONS OF THE CHEMIST TO THE TEXTILE INDUSTRY.

The consideration of the subject of textiles would be incomplete without some reference to the indispensable work of the chemists in the development of the industry. Without the art of chemistry and the genius of the brilliant men who have devoted their lives to this form of research, our textile fabrics of to-day would be very different indeed from the diversified and beautiful products which, especially as worn by the fair sex, add so much to the attractiveness of life about us.

It may be of interest to mention briefly a few of the most important contributions to the textile art which chemists have made:

Among the primitive races the use of colors undoubtedly preceded the use of textiles, and it is probable that the earliest fabrics were colored with stains obtained from fruits and plants. We can imagine that by progressive steps it was found that some stains faded or washed out quicker than others, and there was a gradual selection of those found best. Then came the discovery of the influence of heat and boiling, followed, perhaps accidentally, by the knowledge that certain salts precipitated some dyes, and that cloths impregnated with these salts retained their colors longer. This discovery of mordants was perhaps the first real point of contact between chemistry and textiles. The date is unknown, but we do know that alum and iron salts were used by the ancient Egyptians.

Bleaching was also known to the oldest peoples. It was first known that cloths of linen or cotton became whiter when dried in the sun, and sun bleaching became a common practice. Then came the development in the use of soaps and alkalis, followed by the discovery of the bleaching property of chlorine. After this came the use of electrolytic chlorine, liquid chlorine, and peroxide of hydrogen. The use of chlorine, of course, is not adapted to wool, but in early times the use of sulphur in bleaching wool was known and peroxide of hydrogen also is now used on that fiber.

Improvements in methods of dyeing have gone hand in hand with chemical progress. The introduction of mordants already mentioned widened the range of available colors. Insoluble colored salts, such as tannate or iron, chrome yellow and Prussian blue, were made use of and the active principles of some of the natural dyes were separated and purified. The reducing action which takes place during fermentation was utilized at a very early date in the dyeing of indigo, and the fermentation vat is still in use.

The greatest advance in the chemistry of dyeing came in the production of Mauve by Perkin in 1856, which was

followed by the marvelous development of the coal-tar dyestuff industry. This discovery is said to have led to the investment of \$750,000,000 in the coal-tar industry and has revolutionized the production of dyestuffs.

The effect of synthetic alizarin upon the raising of madder was profound, for, as a result, a whole industry was destroyed. None the less startling was the discovery of synthetic indigo, which was achieved after long endeavor and great expenditure of money and affected indigo-growing countries like India very greatly. As is often the case with great discoveries, loss comes to some in the readjustment, but in the end the world as a whole gains.

To chemistry, and the research of chemists all over the world, are due these great advancements in the knowledge and preparation of dyestuffs, and, as a result, a new industry unknown through all the ages has now been developed. In this connection, showing what chemistry has done, it is interesting in passing to note that the "Purple of Tyre," the dye used on royal robes in ancient times, and which was obtained a drop at a time by killing small shell fish, has been analyzed and reproduced as a brominated indigo compound. The romance of the ancients has become a chemical formula of the moderns!

One of the greatest discoveries in its effect on the cotton industry was that made in 1850 by John Mercer of the process now known as "mercerization." By a strange chance, however, he simply found that the treatment made cotton yarns and fabrics stronger and gave a greater affinity for dyes, but he did not notice that the process when properly carried out under tension produced luster. For more than forty years this process was little used and little appreciated. It was not until about 1895 that the great increase in luster due to mercerizing under tension was appreciated, and its commercial advantages realized. Since then the art has gone forward by leaps and bounds, and to-day the production of mercerized cotton yarns and cloths is enormous, and has had far-reaching effects on cotton textiles. In many

ways it marks the greatest advance in recent years in that branch of the textile industries.

Artificial silk is another great contribution chemistry has made to textiles. This was invented by Count de Chardonnet, and was first exhibited in Paris in 1889. Development was slow and at first, from a financial point, disastrous, but now the annual production of artificial silk is fully 20,000,000 pounds. There are various processes — collodion, gelatine, and viscose. The viscose process now seems to command the field, and is developing rapidly in quantity and quality produced. Here is a case where common wood pulp, worth a few cents a pound, by a touch of the chemist's art, is changed to a beautiful silky appearing yarn worth from \$2 to \$3 a pound. An entirely new field has been opened up and its development has just begun.

THE DYESTUFF SITUATION.

Up to August, 1914, the textile manufacturers and other users of dyes in this country had given but little thought to the supply of dyestuffs. There was a plentiful amount of dyes, a few were made here, most of them were imported, the prices were whatever the dealers asked, and little attention was given to that part of the business. A few weeks after the war all was changed. The supply was uncertain, prices began to rise, a few ships came in with dyes from Germany, and then after some months England enforced the blockade and Germany could send no more. Then the American consumer of dyes suddenly awoke to the situation and consternation and panic followed. Prices soared, and even at high prices the supply was practically exhausted.

The situation was serious, not only in textiles, but in every business where colors were needed — ink, leather, paper, and even the ornamental cherry at the bottom of a famous American drink was threatened! It looked like an era of black and white. And then the American dyestuff manufacturer came to the rescue. Fortunately for all of us, there were a few men in the United States already engaged in a small way in the manufacture of dyestuffs, mostly made from imported

intermediates or partly manufactured dyes. These men had the ability, the courage, and the foresight immediately to enlarge their plants, and to attempt to meet the situation. They went ahead doubling, trebling their plants, and investing great sums in the business, having confidence that the American people would see that their enterprise was protected against foreign competition after the war, if they took the risk then.

Before the war there were practically no manufacturers in this country of the intermediate products, except aniline oil, and this was made only to a limited extent. The basic materials, benzol, naphthaline, etc., from which the colors are derived, were produced here to some extent, but immediately after the war the demand for them for explosives and other war purposes so increased their production that at present there is an annual production of 30,000,000 gallons as against 3,000,000 before. So that now the American manufacturer of colors is able to get sufficient raw materials to make enough dyes to supply all the needs of the country.

There are many colors not yet made, as naturally manufacturers have first made those most needed and easiest to make, but I have no doubt that in the near future every color necessary will be made here. The prices are high, due largely to the high cost of raw material, which, in turn, is due to abnormal demand on account of the war. The dye maker feels that, owing to the uncertainty of the whole situation, he must pay for the new plants in a few years, so that if at the end of the war he cannot meet conditions, or is not given needed protection, he can scrap the plants without loss.

At the present time it is a fact that we can obtain a supply of most colors, the number is steadily increasing, the outlook is most satisfactory, and, most important of all, the colors are as fast as German or other European colors. With the falling prices for the needed raw materials which are expected after the war, I believe the business will remain largely in the hands of the Americans, and that a great forward step has been made in this American industry.

You may be interested in a few statistics. One concern

before the war made 2,000 tons of dyes per year from foreign intermediates, three-fourths manufactured abroad. To-day this concern is making 15,000 tons, all from American supplies. It has thirty chemists in its laboratories and 3,000 workmen in its factory. It has invested \$4,000,000 in new capital in the past two years.

Another company had in 1913 a capital of \$75,000. To-day its capital is \$5,000,000. Before the war it employed three chemists, one engineer, and twenty workmen. To-day it employs thirty-eight chemists, twenty engineers, and one thousand workmen, with a completely equipped, entirely new plant, turning out twenty-eight times the product made in 1913.

Such progress in so short a time seems almost like one of the tales of Aladdin and his lamp. Fortunately, however, for all of us, these are solid and substantial facts, and a great credit to the men who have so wondrously built up these enterprises.

It is not generally understood that a plant making dyestuffs can be turned in time of need into one for the manufacture of explosives, as the same raw materials and the same apparatus are used for both purposes. The famous dyestuff plants of Germany are running to-day to a great extent on explosives; and the establishment of the great dyestuff industry in Germany was a part of their plan for national preparedness: a commercial success in peace and a national necessity in war. Let us profit by their example and our recent experience, and see that the dyestuff industry is established on a firm basis in this country, not only to provide the needed dyestuffs for our mills, but to make certain the absolutely essential supply of explosives for our national defence.

INDUSTRIAL PREPAREDNESS.

Yet, giving all due credit to the wonderful work of the chemists, let us remember that but for the great industrial development in the United States, and particularly in New England, these brilliant men would have had no opportunity to show what they could do. There would have been no

demand for their product. What is true of the industrial development of the nation in this respect is especially true of the textile arts. It was a mistake for us to be so long dependent on Europe for our dyes. The war instantly demonstrated the peril of our position and enforced more impressively than ever before the need of complete industrial preparedness as essential to any programme of general national preparedness.

The war compelled American chemists to achieve in two years what might have been thought impossible to accomplish in a decade. They proved splendidly equal to the emergency, and it is only just to say that they have been loyally supported by American textile manufacturers. As a result, our country stands to-day more thoroughly independent in the supply of all kinds of textiles than ever before in our national history. Speaking broadly, it is true that there is now enough textile machinery, especially wool and cotton manufacturing machinery, in the United States, to make all of the fabrics that are needed and consumed here. The head of one of the greatest importing houses of New York recently paid this tribute to the wool manufacturers of the United States :

There are no more expert manufacturers anywhere than the best of those in this country. They are wonderfully quick to catch ideas, to modify, alter, improve, and to meet quickly the ever-changing demands of fashion and fancy. They produce as great a variety of woolen cloths as can be found in the whole of Europe together.

The fine and medium grades of the woolen cloths made here are generally better than those of equal quality to be obtained in any other country. American colors are, as a rule, better, clearer, and more lasting than those of similar foreign-made fabrics. The designing talent in America is quite equal to any in Europe.

What he said of the woolen manufacturer might be said with equal truth of the cotton manufacturer, of the silk manufacturer, and of all other textile manufacturers.

The textile art in the United States represents not only a great, but an eagerly progressive industry of boundless ambi-

tions, and it is an industry in which our New England leads. It is indeed the very backbone of our industrial body.

What is it that makes possible the city of greater Boston of to-day — this community of 1,500,000 souls, gathered within a radius of ten miles of the gilded dome of the State House? It is not, as of old, our ships in ocean trade, for most of them are gone, nor is it the volume or character of our foreign commerce. That commerce consists of the export chiefly of agricultural products and crude materials, most of them from distant States, and of the import of certain kinds of materials and merchandise consumed in this vicinity. The total normal value of this foreign commerce is only about \$200,000,000 a year, in contrast with the \$2,700,000,000 of New England manufacturing industries. Only relatively a handful of our people could possibly be supported by the overseas trade of the port of Boston, carried, as 98 per cent of it was before the war, by the shipowners and seamen of Europe.

If Boston were dependent solely on this foreign commerce, it would be little larger or more populous to-day than Salem or Gloucester or Newburyport. What makes Boston what it is is the hundreds of manufacturing towns and villages back in the country, on the hills, and in the valleys of New England, owned in large part in Boston, managed or financed in large part from here, and making prosperous the great city which has their welfare in its keeping. It is these unseen chimneys, this unheard machinery, which maintains Boston as the capital of New England, and potentially the second or third financial center of the United States.

And in these New England industries, as has been shown, it is the textile arts that stand forth preëminent. It is these that are the mainstay of the thrift and comfort which we see about us. It is due largely to them that Boston has been supreme as a city of good works, of philanthropy, of art, and of learning. More than most of our people realize, they are all of them indebted to the spindles and looms of the mills of New England for the life they live, for the progress they have achieved, and for all that is most characteristic and most fortunate in our civilization.

ACTIVE AND IDLE MACHINERY.

A RELATIVELY SMALL PERCENTAGE OF UNEMPLOYMENT
AS 1916 DREW TO A CLOSE.

A CONDITION of remarkable activity is disclosed by the returns of the quarterly census of idle and active machinery prepared by the National Association of Wool Manufacturers for December 1, 1916. The autumn brought in the woolen trade a general improvement of conditions, so that the proportion of machinery unemployed on December 1, 1916, was much less than at the corresponding period of the previous year, December 1, 1915. Only among the carpet looms was there shown on December 1 to be any considerable proportion of unemployment. After some hesitation the purchasers of carded woolen and worsted goods had come to the conclusion that prices were going to be higher, if anything, and that, moreover, it might be difficult to procure the desired quantity of fabrics. The demand was sharper, naturally, in the carded woolen than in the worsted end. The industry as a whole presented a higher degree of activity on December 1 last than at any time since protective tariff rates gave way to the inadequate rates of a tariff for revenue only—fortunately suspended in its practical consequences by the war in Europe. The total amount of machines reported and the number in operation and idle on December 1, 1916, were as follows:

MACHINERY.	Total Number Reported.	In Opera- tion.	Idle.
	December 1, 1916.		
Looms, wider than 50 in. reed space	41,491	36,194	5,297
Looms, 50 in. reed space, or less	12,600	11,410	1,190
Looms, carpet	2,776	2,229	547
Woolen cards, sets	3,160	2,899	261
Worsted combs	1,852	1,682	170
Woolen spinning spindles	1,040,240	958,827	81,413
Worsted spinning spindles	1,831,695	1,654,427	177,268

It is interesting to observe the varying amount of unemployment as shown by these quarterly inquiries between March 1, 1915, and December 1, 1916. Idleness was very serious in the first months of the war, for great quantities of foreign wool manufactures had been "dumped" into the country in the first months of the Simmons-Underwood tariff, and the outlook in business in general was not such as to encourage large purchases of woollen goods. Not until the war had lasted a year was there any very substantial recovery so far as the wool manufacture was concerned. It is noticeable that war orders from foreign governments no longer affect the situation, for such orders in the woollen field are no longer given to America, but are reserved for the mills at home. It is still true, undoubtedly, that some of the machinery classified as idle is unemployed because labor cannot be procured to run it. There were three increases in wages in the wool manufacture between January 1, 1916, and January 1, 1917 — increases aggregating about 25 per cent. This has added appreciably to the cost of manufacture, but it has not enabled the woollen mills to compete for labor with the munitions factories and similar enterprises, though the inevitable reduction in the amount of munitions bought in this country by the entente governments is likely to release much labor later on. The proportion of idle machinery to total machinery reported for the eight quarters from March 1, 1915, to December 1, 1916, is as follows:

MACHINERY.	Per Cent of Idle to Total Reported.							
	Dec. 1, 1916.	Sept. 1, 1916.	June 1, 1916.	Mar. 1, 1916.	Dec. 1, 1915.	Sept. 1, 1915.	June 1, 1915.	Mar. 1, 1915.
Looms, wider than 50 in. reed space . . .	12.8	18.	13.9	12.1	16.8	26.7	30.4	32.7
Looms, 50 in. reed space, or less . . .	9.4	10.6	6.7	7.7	20.2	31.2	25.9	32.
Looms, carpet . . .	19.7	26.	17.6	17.1	19.6	24.	24.5	45.8
Woolen cards, sets . .	8.3	10.9	12.7	7.3	8.8	15.5	17.7	22.7
Worsted combs . . .	9.2	12.9	10.	7.9	14.2	14.	30.	29.4
Woolen spinning spindles	7.8	13.3	9.8	9.3	8.6	14.2	17.4	21.5
Worsted spinning spindles	9.7	10.8	11.	7.9	15.6	17.	39.6	33.

Obituary.

JOSEPH METCALF. (*With portrait.*)

MR. JOSEPH METCALF, treasurer of the Farr Alpaca Company, one of the foremost textile manufacturers of America, honored and beloved for many wise benefactions, died at his home in Holyoke, Mass., on November 16, 1916, in his seventy-sixth year. A pioneer in his branch of the industry, Mr. Metcalf had manifested remarkable ability through a long and busy life. He had attained the utmost success, and all who knew him recognized it as a reward, not only of wisdom in practical affairs, but of true nobility of character.

Mr. Metcalf was one of the founders and always the guiding financial head of the famous company with which for more than four decades his name had been so conspicuously identified. Though born in Leeds, England, March 24, 1841, his whole active career had been passed on this side of the Atlantic, for while he was a lad, an accident to the eyesight of his father caused him to be adopted into the family of an uncle, resident in Hamilton, Ontario, Canada. There, in private and public schools, he received his education, and at sixteen, with a resolute spirit, he set out to make his way in the world.

His first employment was with the Great Western Railway, subsequently merged into the Grand Trunk Railway of Canada. In the Great Western service Mr. Metcalf immediately began to demonstrate that notable perseverance, conscientiousness, and business sense which characterized his maturer years in New England. By successive steps he rose through all positions in the combined office of traffic auditor and general ticket agent of the railroad corporation, until he became chief of the department at the early age of twenty-two. Then he was appointed chief accountant, uniting his former office with that of the general accountant. Another promotion a few years later made Mr. Metcalf the treasurer of the Great Western Company, thus winning for him, while still a young man, the highest post attainable on the financial side of railroad life.

But the fullest years of Mr. Metcalf's career were all before

him. In company with his brother-in-law, Mr. Herbert M. Farr, a wool manufacturer of Hespeler, Ontario, Mr. Metcalf in 1873 visited the United States, coming, as he has testified, because of the business advantages offered here by the protective tariff system. On this prospecting journey, Mr. Metcalf and his associate were struck by the facilities for manufacturing offered by the valuable water power privileges of Holyoke. As a result of this observation, the Farr Alpaca Company was incorporated under the laws of Massachusetts on November 13, 1873, Mr. D. H. Newton, a builder of Holyoke, joining with Mr. Metcalf and Mr. Farr in the new enterprise. A year later, in November, 1874, Mr. Metcalf took up his residence in Holyoke, where a mill capable of employing about 400 hands was constructed for the company by Mr. Newton. Mr. Metcalf became the treasurer of the concern and Mr. Farr the agent.

From the first, these officers gave the closest and most untiring attention to every detail of the business of the company, which received an award at the Centennial Exposition in Philadelphia in 1876 "for an excellent exhibit of black alpaca and mohairs, cashmeres and serges, all of superior manufacture." Fabrics made at Holyoke included worsted dress goods, all wool cashmeres and henriettas, and serge linings to compete with those that had come from Bradford, England.

It was no easy task to enter upon fields new to American manufacturing, but Mr. Metcalf and his colleagues pressed on and overcame every difficulty. Because of faith in the management, stock in the new enterprise was taken by residents of the neighborhood about Holyoke and Springfield, who soon found themselves shareholders in a lucrative business. Steadily this business increased, until it was employing 3,000 operatives.

When Mr. Farr died in 1900, Mr. Metcalf became agent, combining this office with that of treasurer. He always aimed to pay the most generous wages to his work-people that could possibly be given in the calling in which they were engaged. Always he was most considerate in his attitude toward those who labored for the company. In 1914, a profit-sharing system was established by the Farr Alpaca Company, which has since been described as the fairest and most satisfactory in existence. Under this plan, a wage dividend on the actual year's wages received, reckoned at the same rate per cent as the stockholders of the company receive in cash dividends per share of stock, is

given to each employee rendering satisfactory service, who has been with the company for the full year previous, while the proportionate amount due to each employee who has been on the rolls less than one year, or whose service is unsatisfactory, is not retained by the management, but is paid over to a pension fund for the benefit of the aged or disabled workers. At the end of the first year, on January 5, 1915, a wage dividend of 8 per cent, equivalent to nearly \$100,000 in the aggregate, was received by about 2,500 employees, who rendered their thanks in an address delivered to Mr. Metcalf at the annual meeting of the stockholders on January 27, 1915, as follows:

The employees of the company believe that this is one of the important steps which has been taken in this country to solve the relation between labor and capital, and hope that it not only will be continued, but may be the means of establishing an enduring feeling of good-will between the stockholders and employees of the company.

Thus believing, the employees of the company do hereby convey to you, and through you to the directors, their appreciation of the fairness and wisdom which has marked the institution of the profit-sharing plan, and especially do they express to you their heartfelt regard for your untiring efforts to deal justly with them, and to secure for them a fair share of the productive output of the company, and in recognition of which service they present to you this testimonial of their affection and esteem.

For many years, Mr. Metcalf, though averse to assuming external obligations, had been a valued member of the Executive Committee of the National Association of Wool Manufacturers. His opinions were often consulted in large matters of national interest, and in the tariff revision of 1883 he was instrumental with the officers of the Association in securing a separate classification for all-wool dress goods, which up to that time had been grouped with the cheaper cotton warp fabrics — a change which proved of substantial advantage in the development of the industry. Mr. Metcalf was an earnest protectionist, who had thought deeply on economic questions. Until protection became an issue in Canada, during his residence there, he did not vote at all. His first ballot was cast for a protectionist candidate, who, as it happened, was the first distinctively labor candidate ever nominated for high office in the Dominion. Mr. Metcalf was long a director in the Home Market Club of Boston, and on the day before his death was elected vice-president of this organization.

Naturally, Mr. Metcalf, though of retiring disposition, engrossed by heavy business responsibilities and devoted to his home, was sought for aid and counsel in many undertakings. He would never accept political office, but he was a director of the Springfield Safe Deposit and Trust Company, the Holyoke City Hospital and the Holyoke Public Library. Every good cause in Holyoke and vicinity had received generous help from him. He was always most reticent about his gifts, but his friends and neighbors, nevertheless, knew that in his unostentatious way his was the kindest heart and the most open hand in the community. The funeral of Mr. Metcalf was the occasion of deep and general mourning, and the grief of his hundreds of employees bore unmistakable proof of their appreciation of the broad and generous outlook and warm human sympathy which had characterized his entire life. Mr. Metcalf was a devoted member of St. Paul's Protestant Episcopal Church of Holyoke.

He leaves a widow, who was Miss Clara W. Farr, the daughter of Mr. Marshall H. Farr, one of the leaders in the construction of the Grand Trunk Railway of Canada. There are three children — Mrs. Addison L. Green, Mr. Frank H. Metcalf, assistant agent and assistant treasurer of the Farr Alpaca Company, and Mr. Howard F. Metcalf, superintendent of the finishing mill of the company.

CLARENCE J. BODFISH.

MR. CLARENCE JULIUS BODFISH, one of the best known of New England wool manufacturers, an expert in technical information and an able executive, died at his home in Cambridge, Saturday, November 25, at the age of sixty-two. On May 1, 1915, Mr. Bodfish had retired from active affairs because of ill health, but had apparently recovered his strength in a measure, and his sudden death brought a shock to his friends and acquaintances.

Mr. Bodfish was born of old New England stock, on April 26, 1854, at Chicopee, Mass. He began his forty-five years of textile manufacturing as a lad of sixteen in the woolen mill of Joseph Selden at Rockville, Conn. He was subsequently connected with the Florence Mills Company of Rockville, the Home Woolen Mills Company of Beacon Falls, Conn., the Camden Woolen Company of Camden, N.J., and the famous Washington Mills

of Lawrence. He was the superintendent of the Washington Mills when this institution became the nucleus of the American Woolen Company, in whose employ he remained to the end of his business career. His knowledge and ability were promptly recognized by Mr. William M. Wood and other officials of the great corporation, of which Mr. Bodfish became sales secretary. Subsequently he was entrusted with the important responsibilities of agent of the Assabet Mills of Maynard, the largest carded woolen establishment in this country. Soon after the Wood Worsted Mill, the largest worsted manufacturing establishment in the world, was completed, Mr. Bodfish became the treasurer, retaining this post until 1910, when he was again promoted to the position of general agent of the worsted division of the American Woolen Company, in which capacity he served until his retirement in 1915.

Mr. Bodfish was not only a very capable, practical manufacturer, but also a man of warm human sympathies. He understood his employees and they respected him. During his service in the great Assabet Mill at Maynard, Mr. Bodfish was one of the organizers of the Assabet Institution for Savings, of which he was for a long time president. He took a further important part in the development of the Maynard community as president of the Assabet Improvement Association, and he had been also a director in the Bay State National Bank at Lawrence. Mr. Bodfish was a member of the National Association of Wool Manufacturers, the Home Market Club, and the Middlesex Club, and he was a member also of the Shepard Memorial Church of Cambridge.

Mr. Bodfish was married on October 5, 1881, to Minnie Seymour Smith of Rockville, Conn. His wife survives him, with a son, Mr. Clarence S. Bodfish, agent of the Waverly Mills of the American Woolen Company in Pittsfield, Maine, and a daughter Harriet (Mrs. Chauncey F. English) of Brookline.

ALVIN D. HIGGINS.

MR. ALVIN DYER HIGGINS, who for many years had been a conspicuous leader in the American carpet manufacture, died suddenly in his office at Thompsonville, Conn., November 7. A native of Maine, Mr. Higgins began his business career when a boy, with his uncle in the E. S. Higgins Carpet Company of New

York. He acquired a remarkably thorough knowledge of all departments of the industry and became general manager of the business. When in 1901 the Higgins Company was consolidated with the Hartford Carpet Corporation, Mr. Higgins was a leader in the undertaking, and became vice-president and general manager of the new and greater concern. Later, in 1914, the Bigelow Company of Lowell and Clinton, Mass., was joined with the other large corporations under the name of the Bigelow-Hartford Carpet Corporation, with a capital of \$13,500,000, Mr. Higgins continuing as vice-president. He had shown a very generous spirit toward the people of the manufacturing community of Thompsonville, and had given club-houses and recreation grounds for their benefit. Mr. Higgins was sixty-six years old at the time of his death. He leaves a wife and two daughters.

THEODORE W. SPECHT.

MR. THEODORE W. SPECHT, for many years conspicuous as a textile merchant and manufacturer, died at his home, Hazelhurst, Skaneateles, N.Y., Wednesday, November 8, 1916, at the age of seventy-five years. Mr. Specht was a native of Hamburg, Germany, but had been a resident of the United States since childhood. He lived in New York in his youth, attended school there, and secured there his business training. Soon after the Civil War he established himself in the commission business in New York, and in 1877 became identified with Arnstaedt & Company, textile importers and commission merchants. Ever since then Mr. Specht had been the head of this house and also the president of the Glenside Woolen Mills of Skaneateles Falls. Mr. Specht was a generous friend and an active, public-spirited citizen. He leaves a wife, a daughter and a son, Mr. Harry Mortimer Specht, connected with Arnstaedt & Company, and the Glenside Woolen Mills.

LOUIS S. FISKE.

MR. LOUIS S. FISKE, for many years an active wool merchant of Philadelphia, died on Saturday, November 11, 1916, at an age of more than three-score and ten. He had been for many years a traveling representative of the famous wool house of Justice, Bateman & Co., of Philadelphia, where he acquired his knowl-

edge of the trade. Later he engaged in business for himself with Edward and William Mellor, under the firm name of Edward Mellor & Company, and subsequently he was associated with Frank H. Keen under the name of Louis S. Fiske & Company. About fifteen years ago Mr. Fiske retired from active business. His first wife was a daughter of the veteran manufacturer, John Dobson. He leaves a second wife and a daughter. Mr. Fiske was a member of the Union League, the Country Club, and other organizations of Philadelphia.

NATHAN EISEMANN.

MR. NATHAN EISEMANN, formerly of the well-known wool house of Eisemann Brothers of Boston, died on Saturday, November 11, 1916, at the Hotel Biltmore, New York City, aged fifty-seven years. Mr. Eisemann had been very successful as a wool merchant, but he retired from the wool trade in 1900, and devoted himself to even larger financial undertakings in New York. He had retained a wide acquaintance in Boston, and his funeral was held at the residence of his son-in-law, Mr. Stanley Sinsheimer, on Commonwealth Avenue, in the presence of many former associates in the wool business. Mr. Eisemann leaves a wife, a son, Mr. Fred B. Eisemann, and two daughters.

WILLIAM F. READ.

MR. WILLIAM F. READ, who had been engaged for many years in the manufacture and sale of dress goods and other fabrics in Philadelphia, died on December 19, 1916, at an advanced age. His active career had covered nearly sixty years. At first he represented English manufacturers, but later engaged in the production of cotton warp goods and of the Lansdowne fabrics, with a silk warp and a worsted filling. The business was incorporated in 1905, under the title of William F. Read & Sons Company. His sons identified with the concern are Franklin C. Read, vice-president, William F. Read, Jr., secretary and treasurer, and Robert F. Read. Another son is Dr. Conyer Read of the University of Chicago. There are also four daughters. Mr. Read was of the kin of Benjamin Franklin.

LOUIS B. HARDING.

MR. LOUIS B. HARDING, one of the best known of the wool merchants of Boston, who had left his home in Newton for a visit to Hot Springs, Va., died suddenly in Washington on January 12, 1917. Mr. Harding was born to and brought up in the woolen business. He was a native of Burlington, Vt., the son of William C. and Lucy Harding, and was graduated from Harvard University in 1879. His father was a woolen manufacturer at Stamford, Conn., and Mr. Harding entered the mill to learn the business, which he pursued until 1885, when the plant was burned. Then he went to New York and established himself in the wool trade under the firm name of Mills & Harding. In 1893, on the death of his partner, Mr. Harding removed to Boston, believing that there would be larger business opportunities there, and he had been a factor in the Boston wool trade ever since.

Mr. Harding leaves a wife, who was Annie A. Jenckes of Stamford, and five children, Louis B. Harding, Jr., and the Misses Florence J., Marion, Nanette, and Lucy Harding. He was a member of the Boston Wool Trade Association, the Brookline Country Club, and other organizations, and a vestryman of the Protestant Episcopal Church of the Redeemer at Chestnut Hill. He was sixty-one years of age at the time of his death.

Editorial and Industrial Miscellany.

A THOUGHT-INSPIRING ADDRESS.

MR. HOBBS'S EXPOSITION OF THE IMPORTANCE OF THE TEXTILE ARTS TO STATE AND NATION.

MANUFACTURERS and other readers of this Bulletin will be keenly interested in the full text of the notable address of Mr. Franklin W. Hobbs, President of the Arlington Mills, on "Textiles — The Backbone of New England," which is published in full in earlier pages. What Mr. Hobbs declares of New England is substantially true also of other textile manufacturing centers, and particularly of the city and district of Philadelphia. The textile mills, employing great numbers of people, come right home to the lives of the people. They give young men and young women a chance to learn useful vocations, and while they are learning them to earn a better and better livelihood. Successive increases in wages have made the textile mills more attractive for young workers and older workers, and in not a few cases industrious employees have themselves become stockholders also — sharers in the fortunes of the business in which they are engaged.

It has been too much the habit of an easy-going or sensational-loving press to give quick credence and wide circulation to complaints of certain conditions of mill life — conditions which belong as a rule to now remote years, or are rapidly passing, if they have not altogether passed, quite out of existence. As a matter of fact, as Mr. Hobbs has shown, modern mills are more sanitary and wholesome than many modern schoolhouses, and the reputed hazards to life and limb inherent in textile operations are very much less than have been apprehended.

In nothing has the real progressive spirit of our age been more notably manifest than in the design and construction of textile manufacturing establishments and in provision for the safety and the comfort of those who labor in them. There is nothing sensational in any advance like this — it is taken as a matter of course. It fills no headlines in the newspapers. But the facts

deserve to be authoritatively stated. Mr. Hobbs has done this in his address, just as he has emphasized the vast importance of the textile arts to the prosperity and happiness of the communities where the mills are located.

In every period like that of the early disastrous trial of the Simmons-Underwood tariff from January-July, 1914, inclusive, there comes a very sharp realization of the importance of the textile industry, when textile mills are forced to reduce their working forces or to go upon short time or to shut down altogether, as was the case of one-third of the machinery of the industry during that experiment of tariff for revenue only before the European war began. Idle or part idle mills instantly affect the business of the local storekeepers, transportation lines, savings institutions — in fact, all the multifarious economic activities of a town or State. Even the churches themselves feel the pinch of textile depression, for faithful workers are usually devout and generous givers so long as they have anything to give.

Too many persons unconnected with the textile industries see in the towering mills, with their massive walls and complex machinery, only something like a prison or a fort. Little do they realize how vitally, at so many points, in such a large and deep way, the business of these mills touches the very foundations of the life of the whole community. Take the textile mills out of New England, take them out of eastern Pennsylvania, take them out of those sections of New York or New Jersey, where they constitute, as they often do constitute, the greatest and most productive of all industries, and the civilization of those regions would almost have to be made all over, on a vastly reduced scale, with astonishingly lessened opportunities for prosperity and comfort, not only for the textile workers themselves, but for men and women of other interests, who have never dreamed that they were dependent in any way on a business which they view as only monotonous and grim and sordid. Such an address, setting forth such facts, as this of Mr. Hobbs, brings a very salutary reminder to the thoughtless and the uninformed that it is hard toil in great, highly developed industries that, after all, makes our modern State and modern civilization possible.

LOOKING BACK TO THE ELECTION.

THE INDUSTRIAL STATES AS A WHOLE SUSTAINED PROTECTION — PACIFISM RULED THE FAR WEST.

It was the great war in Europe that last November reelected Mr. Wilson to the Presidency of the United States. In the first place, the war arrested the direct inevitable consequences of the Wilson tariff for revenue only, which by midsummer of 1914 had come to be terrible, indeed. Idle or half-idle shops and factories, bankruptcies, soup houses, breadlines — all these changed or vanished as the war drew on and European military demands restored life to American industry. In the second place, the war tended to obscure domestic issues and produced a not unnatural reluctance to change a National Administration at a time when all the overseas world was burning down. But for the European conflagration which distracted the minds of men, President Wilson would certainly have been defeated. This was foreshadowed in the Congressional elections of November, 1914, when the President's own State and all the other great industrial States went heavily against him, principally on the tariff issue, even after the disastrous early results of reckless economic legislation had been somewhat alleviated by the sudden slowing down of European competition and by huge war orders for foodstuffs and munitions. If European competition had continued and foreign manufacturers had had two full years more to spy out the promised land, undoubtedly the country would have gone against the President and his party with a vastly increased emphasis — indeed, in the face of the blackness of the gathering storm the party might have been constrained, as in 1896, to seek safety in a precipitate change both of issues and of candidate.

As it was, wherever last November the remembrances of what the Wilson tariff policy had done to the country before the war were keenest and protection *vs.* free trade was made and kept the most distinctive issue, the protectionist cause received substantial popular majorities. On election night and the morning after, the defeat of the President was conceded by his own followers in New York and Washington, in the light of the returns from the great industrial Commonwealths between New England and the upper Mississippi Valley. But for the first time in national history these great States did not determine the struggle. The further agricultural West with its host of emancipated

women joined the still dominantly agricultural South to give a reelection to President Wilson.

There were other and minor contributory causes, but it was chiefly the iterated and reiterated cry that "He kept us out of war" which gave President Wilson a renewed lease of the White House. The South voted for him from force of habit; the West, because a large proportion of the men of the West and nearly all the women were for peace at any price. Mr. Bryan perfectly knows the far Western temper, which was significantly expressed not many years ago by the bucolic statesman who proclaimed in Congress that when any foreign Power devised guns that would shoot from the Atlantic or Pacific coast into the Mississippi Valley, he and his people would favor a great navy and a great army and a system of fortifications—and not before then. Of course, this is not the sentiment of all of the men of the further West, but it is the sentiment of a sufficient number of those men, added to most of the women, to explain the combination of South and West that has made possible the first reelection of a Democratic President since the time of Andrew Jackson.

It was not that the further West was merely reluctant to take sides in the present war, for it is this same further West which has the very least feeling one way or the other, either pro-Ally or pro-German—it is anti-navy, anti-army, anti-preparedness, on general principles. The spirit which gave President Wilson his majorities in that distant region is the same spirit which habitually prefers to expend \$10,000,000 on preposterous federal buildings for meager and hopeless little rural villages rather than to put the same sum into a powerful battleship for the united national defence. And it is not at all surprising that now that this region has reelected President Wilson, it is more vehemently insistent on such "pork" than ever before.

It is true that the recent Congress had made very large appropriations for naval and military purposes, but Mr. Bryan had gone up and down the far Western country, insisting that President Wilson had very reluctantly and only temporarily consented—that he was against navies and armies at heart—and had he not retained Secretary Daniels in order to make as little actual progress as possible toward the real strengthening of the fleet, and appointed Secretary Baker, another pronounced pacifist, to be the head of the War Department?

Far Western pacifism is very little or not at all concerned over

the issues of the war in Europe, but is very deeply and powerfully impressed by the horrors of that war, and is determined that the United States shall never, never join in any war of any kind — this beneficent result to be achieved by depriving the United States of the means to fight one. This is the West that has so often rolled up such enormous majorities for Mr. Bryan — it always knows what it wants and how to get it. It is the least alert, probably, of all the sections to the historic controversy between protection and free trade — or at least has seemed to be the least interested except when Canadian reciprocity threatened a little real, direct competition in agricultural products. For hogs and corn and barley and wheat and vegetables and cattle the far-West was then for a while quite energetically protectionist.

President Wilson's sudden conversion to the idea of a tariff commission, and his promise to appoint such a commission to study trade questions and discover what readjustments would have to be made after the war, did not deceive Massachusetts or New York or Pennsylvania or Michigan or Indiana or Illinois — all important manufacturing Commonwealths with a great diversity of industries — but it did deceive most of the region beyond the Mississippi, which was quite disposed to believe anyway that the tariff was not an important issue this time. One thing which the election has demonstrated is that protection is preëminently the great asset of the Republican party, which can hope to win hereafter only when this can be made the paramount issue of a national campaign. President Wilson through the eight-hour law had made a reckless bid for the industrial vote. The only possible counter to this was the protective tariff. Wherever the Republicans made instant and emphatic use of this fact, they won. Where they did not or could not adequately utilize the protection issue, they were defeated. This is the sum and substance of the great national political contest of 1916.

PRESENT MANUFACTURING PROBLEMS.

A SIGNIFICANT ADDRESS BY MR. EDWIN FARNHAM GREENE OF THE PACIFIC MILLS.

At the annual convention of the National Wholesale Dry Goods Association in New York City on January 17, Mr. Edwin Farnham Greene, the treasurer of the Pacific Mills, delivered an

important address, "An Insight into Textile Manufacturers' Present Problems." Mr. Greene told his audience that there were many points in connection with these problems which interested manufacturers and merchants alike, and he described first the problems relative to the supply of raw materials.

The advance in the wool market was illustrated by a set of figures showing the cost per pound of different grades on Aug. 1, 1914, and Jan. 1, 1917. These were as follows: Australian merino from 31c. to 71c.; New Zealand crossbreds from 26 to 60c.; Territory from 23 to 45c.; Domestic fleeces from an average of 28c. to 48c., and South American from 24 to 51c.

Cotton, based on the quotation for Middling Uplands, was quoted in July, 1914, at 13½c. which had declined to 7.60c. when the Cotton Exchange reopened after the temporary closing due to the unsettled conditions at the beginning of the war. In the interim, the Pacific Mills had bought a large tonnage as low as 6¼c. landed in Lawrence. This purchase helped to keep costs down. Cotton went as high as 20.95c. in November, 1916, but has since reacted downward.

Goods purchased for converting were also referred to. Gray goods for their 1982 percale which cost 6½c. on Aug. 1, 1914, went down to 5½c. and even lower, and then turning upward, went as high as 10¾c. and occasionally higher. Other grades acted in the same manner. Fine goods costing 5¼c. at the beginning of the war were later available at 4¾c., advancing to 9½c. and to-day costing 9c.

General supplies, such as dyes, starches, oils, etc., experienced advances. Colors advanced 3 to 5 times the cost before the opening of the war. One instance cited, although extraordinary, was that of Alizarine red, which cost 20c. per pound before the war and now costs \$11.00. Synthetic indigo, available formerly at 44c., advanced to \$2.00 and now sells at \$1.25. In chemicals advances were common. Tannic acid is costing double the old figure, while the present cost of caustic soda is more than double the old figure and did go above 4c. Potato starch increased six-fold and has not receded much. Zinc dust increased seven-fold, but is steadily declining now and costs 20c. as compared with the old price of 5½c.

Wages of the Pacific Mills were increased nearly 30 per cent during 1916. The average weekly earnings in Lawrence a year ago were \$9.99, while to-day the figure is \$12.98. Pacific Mills employ 7,500 people in Lawrence alone, so this is a big item. Looking back to 1899, it was shown that there had been ten wage increases and only one decrease, and the result is a net increase of 74.6 per cent to date.

Textile machinery to-day costs just twice as much as before the war. The same applies to repairs.

Other problems which confront the manufacturer to-day are labor shortage, increased taxation, and the need of capital. More capital is needed to finance operations to-day on account of the higher price levels.

To-day it takes 50 per cent longer and costs just double what it did two or three years ago for building operations. There has been no important increase in the size or capacity of the larger textile plants during the past five years. This may tend to steady prices in the future, especially on gray goods.

WOOL QUALITIES AND YARN SIZES.

THERE exists in the minds of many people a haziness as to the meaning of the terms used in the wool trade, indicating relations between the counts of yarn and the spinning qualities of wool.

The following extract from a recent number of Dalgety's Review is calculated to throw needed light on this somewhat obscure subject, and is, therefore, given in full:

DEFINITION OF WOOL TOPS.

Merino spinning counts: The bulk of the merino wool sold would come within the following:

80's, 72's, 70's, 66's, 64's, 60's (super), 60's (ordinary).

Crossbred spinning counts:

58's, 56's, 50's, 46's, 44's, 40's, 36's, 32's.

Wool tops is the name given to wool after it has undergone the process of scouring and combing. The dictionary meaning of the word "tops" is—"Balls of combed wool from which the 'noils,' or short and tender fibers, have been taken out in the process of combing," which is essentially a separation of the long fibers from the short.

Tops, briefly stated, are "combed wool," and are manufactured in the worsted trade. A wool top signifies a quality or degree of fineness in the "Yarn," which it is possible to produce from the top. The quality is known by the spinning count or number. Technically speaking, 1 lb. of 60's tops represents 60 hanks of yarn each of 560 yards.

Thus it works out that—

1 lb. of tops of 80's spinning quality will spin a thread of yarn—80 times 560 yards—44,800 yards—25.45 miles.

1 lb. of tops of 60's spinning quality will spin a thread of yarn—60 times 560 yards—33,600 yards—19.09 miles.

1 lb. of 40's spinnings quality will spin a thread of yarn—40 times 560 yards—22,400 yards—12.73 miles.

The following may be useful in furnishing a guide as to the quality of the tops usually made from the various classes of wool:

80's and over	Extra fine super merino.
72's	Fine super merino.
70's	Super merino.
66's	Fine merino.
64's	Medium fine merino.
60's (super)	Average merino.
60's (common)	Lowest merino.
58's-56's	Quarter-backs and come-backs.
50's	Half-breds.
46's	Half-breds.
Half-bred Leicester would make — 50's.	
and	
Half-bred Lincolns would make — 46's.	
44's	Three-quarter backs.
40's	Leicester.
36's	Lincolns.
32's	Coarsest Lincolns.

A SUPPLY OF AUSTRALIAN WOOL.

THE EMBARGO LIFTED FROM 50,000 BALES — MUCH MORE THAN THIS IMPERATIVELY NEEDED.

THERE was read at the annual dinner of the Boston Wool Trade Association on Tuesday evening, January 16, an important communication from Sir Richard F. Crawford of the British Embassy at Washington, to the effect that the British government, "anxious to meet the American manufacturer as far as possible," would immediately arrange to liberate 50,000 bales of Australian wool for America on account, and that it was hoped that further amounts would be available. It was stated further that 5,000,000 pounds of carpet wools from British territories would be allowed to be exported this year to the United States, and that every effort would be made to permit the export also of a certain amount of English luster and down wools.

No indication was made at that time as to the way in which these Australian and other British wools would be distributed. That was left to be determined. On Dec. 31, 1915, the British authorities began to make a census of wool stocks,

including tops, yarns, noils, wastes, and fabrics, in the United Kingdom, and the general result of this inquiry was presumably known when Sir Richard Crawford sent his communication to the Textile Alliance, Inc. But even at that time Sir Richard explained that "the extent of the military requirements of the Allies is still uncertain, so that the total amount of Australian wool which can be spared for America this year cannot yet be ascertained."

In the season of 1915-1916 the United States took 564,000 bales of Australian wool, or 31 per cent of the entire clip, as compared with 41 per cent taken by the United Kingdom. Therefore, the release of 50,000 bales does not go very far toward solving the question of an external wool supply for American manufacturers. It is undoubtedly the sincere purpose of the British government to release additional amounts of Australian wool as soon as the military needs of the Allied nations can be more precisely determined. It may be that a second allotment of 50,000 bales will very soon be promised.

The taking over of the entire Australasian wool product by the British Imperial authorities at the end of November last was a war measure pure and simple, and as such occasioned no resentment in the United States. But there would be surprise and regret here in this country if the London government failed to recognize that the requirements of American manufacturers for a considerable amount of Australian wool were very real and large, not to be measured by importations in previous years when less machinery was in operation. Liberal takings of Australian wool on American account are necessary to meet the urgent needs of American manufacturing, and such takings would be mutually beneficial to America and to Australasia.

A mere matter of 50,000 bales will not begin to suffice. America requires and should have substantially as much Australian wool this present year as was received in 1915-1916. There are no surplus accumulated stocks in this country, and what wool remains is passing very fast into the machinery of American mills.

It is to be hoped that a satisfactory method of distribution of the amount of the Australian supply, whatever that may be, will be adopted. An arbitrary allotment based upon previous purchases would be very difficult, and at this writing it seems as if

the method of public auctions would be the best. There is need also of a considerable supply of British luster and other wools, and carpet manufacturing in the United States can take all of and more than the 5,000,000 pounds of Class III wools from British possessions promised by Sir Richard Crawford. The carpet manufacture in this country has been especially embarrassed by the war, because all of its wool materials have to come from beyond our borders, and almost altogether from areas more or less deeply concerned in the present conflict.

QUARTERLY REPORT OF THE BOSTON WOOL MARKET
FOR OCTOBER, NOVEMBER, DECEMBER, 1916, AND
DECEMBER, 1915.

DOMESTIC WOOLS. (F. NATHANIEL PERKINS.)

	1916.			1915.
	October.	November.	December.	December.
OHIO, PENNSYLVANIA, AND WEST VIRGINIA.				
(WASHED.)				
XX and above	36	38	40 @ 41	32 @ 33
X				30 @ 31
Blood				38 @ 39
"				40 @ 41
"				40 @ 41
Fine Delaine	40 @ 41	41 @ 43	41 @ 43	35 @ 36
(UNWASHED.)				
Fine	32 @ 33	33 @ 35	36 @ 38	26 @ 27
Blood	39 @ 40	40 @ 43	47 @ 49	35 @ 36
"	40 @ 42	43 @ 45	48 @ 50	37 @ 38
"	40 @ 42	42 @ 44	45 @ 47	37 @ 38
Fine Delaine	36 @ 37	38 @ 41	42 @ 44	31 @ 32
MICHIGAN, WISCONSIN, NEW YORK, ETC.				
(UNWASHED.)				
Fine	29 @ 30	32 @ 33	36 @ 38	24 @ 25
Blood	37 @ 38	40 @ 41	45 @ 49	34 @ 35
"	41 @ 42	42 @ 43	48 @ 50	36 @ 37
"	40 @ 41	41 @ 42	45 @ 46	36 @ 37
Fine Delaine	35 @ 36	37 @ 38	42	28 @ 29
KENTUCKY AND INDIANA.				
(UNWASHED.)				
Blood	44 @ 45	45 @ 46	53 @ 56	38 @ 39
"	43 @ 44	44 @ 45	53 @ 55	38 @ 39
Braid	36 @ 37	37 @ 38	38 @ 40	33 @ 34
MISSOURI, IOWA, AND ILLINOIS.				
(UNWASHED.)				
Blood	40 @ 42	45 @ 46	46 @ 48	35 @ 36
"	39 @ 40	43 @ 45	46 @ 47	35 @ 36
Braid	36 @ 37	39 @ 40	40 @ 44	31 @ 32
TEXAS.				
(SCOURD BASIS.)				
12 months, fine, and fine medium	80 @ 85	85 @ 87	95 @ 105	68 @ 69
Spring, fine and fine medium	70 @ 75	75 @ 78	85 @ 88	60 @ 62
Fall, fine and fine medium	57 @ 58	63 @ 65	75 @ 78	55 @ 57
CALIFORNIA.				
(SCOURD BASIS.)				
12 months, fine	80 @ 85	85 @ 90	95 @ 100	65 @ 67
Spring, fine	65 @ 70	70 @ 75	75 @ 80	60 @ 62
Fall, fine	60 @ 62	62 @ 64	65 @ 67	54 @ 56
TERRITORY WOOL: Montana, Wyoming, Utah, Idaho, Oregon, etc.				
(SCOURD BASIS.)				
Staple, fine and fine medium	88 @ 90	95 @ 98	100 @ 110	72 @ 73
" medium	83 @ 85	85 @ 90	95 @ 100	
Clothing, fine and fine medium	83 @ 85	90 @ 95	95 @ 100	69 @ 70
" mediums	75 @ 80	80 @ 85	85 @ 90	
NEW MEXICO.				
(SCOURD BASIS.)				
No. 1.	78 @ 80	83 @ 85	88 @ 93	65 @ 67
No. 2.	63 @ 65	68 @ 70	73 @ 75	58 @ 60
No. 3.	58 @ 60	60 @ 62	63 @ 65	53 @ 55
GEORGIA AND SOUTHERN.				
Unwashed	37 @ 38	39 @ 40	40 @ 42	33 @ 35

DOMESTIC WOOL.

October opened with a continuance of the strength which marked the close of September. Accompanying the active demand for all fine staple wools, the various classes of shorter wools shared in the broadening buying. A moderate business was done in fleece wool, but with a comparatively small stock to draw upon. An activity developed in scoured wools both on manufacturers' and dealers' accounts. Australian merino and South American crossbreds shared, in no small way, the attention of manufacturers. The month closed with a marked strength in prices on all classes of wools, augmented by the prospects that the Republican party would win the national election. The result of the national election abated temporarily the feverish buying. All reports in early November from London and Australia showed activity and higher prices in those markets. As the month progressed the scoured wool market developed activity and no one seemed able to predict what the limit would be on scoured wools and many lots changed hands among the dealers "on the street" five or six times within a comparatively brief period. The fact that merchants had no recourse to any other market from which they could replace wools they sold except at advanced prices, left the market free from "soft spots" so ardently and studiously sought after by the shrewd buyers.

December opened with continued activity in scoured wools, manufacturers showing keen interest in fine wools especially, and dealers were most active. This unusual activity kept the offices of the wool houses besieged by active brokers who took the unusual opportunity to harvest the brokerages which were obtainable to the right and to the left. With the supply of foreign and domestic wools considerably broken, accompanied by the peace prospectus from Germany, the edge was somewhat taken off the market. In the meantime the foreign market continued to show strength with a strong upward tendency in South African and South American. The news that Great Britain had embargoed the entire Australian clip was reassuring to those who were holding their wools for full market value. Prior to Christmas week contracting in the West had gone on apace, the contracting being more noticeable in Utah and Nevada. The close of December showed a let-up in the contracting activities which could be attributed more to the extreme views of the growers than to the indifference of buyers.

The quarter under review closed with a market generally more quiet, but this is not surprising in view of the general market conditions in all commodities, and the fact that it was stock-taking time. The stock of all classes of wools in the Boston market as of December 27, 1916, as compared with the same date in 1915 showed a decrease of 13,203,945 pounds.

Respectfully submitted,

F. NATHANIEL PERKINS.

JANUARY 5, 1917.

PULLED WOOLS. (W. A. BLANCHARD.)

	1916.			1915.
	October.	November.	December.	December.
Extra, and Fine A	80 @ 85	85 @ 90	90 @ 1.00	70 @ 75
A Super	73 @ 78	75 @ 82	80 @ 85	63 @ 67
B Super	68 @ 72	70 @ 77	75 @ 80	58 @ 63
C Super	55 @ 58	57 @ 60	60 @ 65	50 @ 54
Fine Combing	80 @ 85	85 @ 90	90 @ 1.00	67 @ 70
Medium Combing	75 @ 80	80 @ 85	85 @ 90	63 @ 65
Low Combing	65 @ 70	70 @ 75	75 @ 80	57 @ 60

PULLED WOOLS.

The accumulated production of lambs super of the previous quarter was cleaned up during the week ending October 14, and from that time pullers were able to market their wools freely and at steadily increasing prices. Values were stimulated to some extent by transactions between dealers, but manufacturers have been constant buyers. The demand from the woolen mills was mainly for the finer grades, but, with the shortage of crossbred fleece, the combers were ready buyers of staple supers.

Pullers' profits were materially reduced by the high cost of pelts, which, at the end of December, reached the record price of \$3.75.

W. A. BLANCHARD.

QUARTERLY REPORT OF BOSTON WOOL MARKET. 111

FOREIGN WOOLS. (MAUGER & AVERY.)

	1916.			1915.
	October.	November.	December.	December.
Australian Combing:				
Choice	48 @ 50	48 @ 50	.. . . .	36 @ 38
Good	46 @ 48	46 @ 48	.. . . .	35 @ 36
Average	42 @ 45	42 @ 45	.. . . .	32 @ 33
Australian Clothing:				
Choice . . . . .	.. . . .	.. . . .	.. . . .	35 @ 36
Good	43 @ 45	45 @ 48	46 @ 50	33 @ 34
Average	36 @ 38	38 @ 40	40 @ 42	32 @ 33
Sydney and Queensland:				
Good Clothing	43 @ 45	45 @ 48	46 @ 50	35 @ 36
Good Combing	45 @ 48	46 @ 48	.. . . .	35 @ 36
Australian Crossbred:				
Choice . . . . .	.. . . .	.. . . .	.. . . .	48 @ 50
Average . . . . .	.. . . .	.. . . .	.. . . .	45 @ 46
Australian Lambs:				
Choice	42 @ 45	45 @ 48	46 @ 50	32 @ 34
Good	38 @ 40	40 @ 43	43 @ 46	31 @ 32
Good Defective	36 @ 38	38 @ 40	40 @ 43	30 @ 31
Cape of Good Hope:				
Choice	38 @ 40	42 @ 45	45 @ 48	32 @ 33
Average	28 @ 32	34 @ 38	38 @ 40	25 @ 27
Montevideo:				
Choice	47 @ 50	53 @ 55	55 @ 58	.. . . .
Average	45 @ 48	50 @ 52	53 @ 55	38 @ 40
Crossbred, Choice . . . . .	.. . . .	55 @ 58	58 @ 60	35 @ 38
English Wools:				
Sussex Fleece . . . . .	.. . . .	.. . . .	.. . . .	.. . . .
Shropshire Hogs . . . . .	.. . . .	.. . . .	.. . . .	47 @ 48
Yorkshire Hogs . . . . .	.. . . .	.. . . .	.. . . .	.. . . .
Irish Selected Fleece . . . . .	.. . . .	.. . . .	.. . . .	.. . . .
Carpet Wools:				
Scotch Highland, White . . . . .	.. . . .	.. . . .	.. . . .	26 @ 28
East India, 1st White Joria . . . . .	.. . . .	.. . . .	.. . . .	41 @ 44
East India, White Kandahar . . . . .	.. . . .	.. . . .	.. . . .	33 @ 37
Donkoi, Washed, White . . . . .	.. . . .	.. . . .	.. . . .	.. . . .
Aleppo, White . . . . .	.. . . .	.. . . .	.. . . .	41 @ 45
China Ball, White	35 @ 40	36 @ 41	37 @ 42	31 @ 35
“ “ No. 1, Open	34 @ 38	34 @ 39	35 @ 40	33 @ 36
“ “ No. 2, Open	28 @ 32	29 @ 33	30 @ 34	28 @ 30

BOSTON, Jan. 4, 1917.

FOREIGN WOOLS.

The last quarter of the year 1916 was one of the most active and remarkable periods in the records of the wool market. The taking of the English clip by the Government, followed by embargoes against shipment of New Zealand, and then of Australian wools, produced marked excitement here, and the larger manufacturers were heavy purchasers of merino and crossbred wools, at steadily advancing prices.

American buyers were compelled to confine their purchases to the primary markets of South America and the Cape of Good Hope, where the world's competition caused an active and constantly advancing market.

The difficulty in securing satisfactory ships, together with the uncertainty of "War Risks," has added to the difficulties of the importer, as well as the cost of doing the business.

Owing to the extreme scarcity of the wools, we do not quote for December fine Australian combing wools. Australian crossbred is not available nor are wools of English growth, nor carpet wools, except Chinas.

MAUGER & AVERY.

IMPORTS OF WOOL AND MANUFACTURES OF WOOL.

Entered for Consumption, Years ending June 30, 1915 and 1916. Quantities, Values, Rates of Duty, and Accruing Duties.

Compiled from Reports, Bureau of Foreign and Domestic Commerce, Department of Commerce.

ARTICLES.	Rates of duty.	1915.					1916.				
		Quantities.	Values.	Duties.	Value per unit of quantity.	Actual and computed ad valorem rate.	Quantities.	Values.	Duties.	Value per unit of quantity.	Actual and computed ad valorem rate.
Wools, hair of the camel, goat, alpaca, or other like animals:											
Class 1—Merino, mestizo, metz, or metis wools, or other wools of merino blood, immediate or remote, down clothing wools, etc.; and all wools not hereinafter included in classes two and three—											
Unwashed wool	Free . . .	209,113,822.00	48,797,438.00	. . . . .	.233 . . .	. . . . .	365,517,400.00	Dollars.	Dollars.	Dolls.	Pr. cl.
Washed wool	Free . . .	4,391,401.00	1,420,107.00	. . . . .	.323 . . .	. . . . .	10,548,965.00	97,424,980.00	. . . . .	.267 . . .	. . . . .
Scoured wool (pounds)	Free . . .	4,568,265.00	1,767,891.00	. . . . .	.387 . . .	. . . . .	26,589,619.00	3,846,244.00	. . . . .	.365 . . .	. . . . .
Total, Class 1 (pounds)	Free . . .	218,073,488.00	51,985,436.00	. . . . .	.238 . . .	. . . . .	402,656,014.00	10,892,631.00	. . . . .	.410 . . .	. . . . .
Class 2—Leicester, Cotswold, Lincolnshire, down combing wools, Canada long wools, or other like combing wools of English blood, and usually known by the terms herein used, and also hair of the camel, Angora goat, alpaca and other like animals—											
Washed and unwashed	Free . . .	14,977,895.00	3,708,433.00	. . . . .	.248 . . .	. . . . .	12,695,755.00	Dollars.	Dollars.	Dolls.	Pr. cl.
Scoured wool (pounds)	Free . . .	72,594.00	25,216.00	. . . . .	.347 . . .	. . . . .	117,123.00	3,745,063.00	. . . . .	.295 . . .	. . . . .
Camel's hair—	Free . . .	26,120.00	7,205.00	. . . . .	.276 . . .	. . . . .	287,025.00	51,385.00	. . . . .	.438 . . .	. . . . .
Washed and unwashed (pounds) . .	Free . . .							83,276.00	. . . . .	.29 . . .	. . . . .
Hair of the Angora goat, alpaca, and other like animals—	Free . . .										
On the skin	15 per cent.	75,807.00	16,474.10	2,471.10	.217 . . .	15.00	129,568.00	30,582.00	4,582.80	.236 . . .	15.00

Not on the skin	15 per cent,	4,607,017.00	1,433,130.00	214,969.50	.311	15.00	9,220,286.00	2,406,693.00	361,003.95	.261	15.00
Total (pounds)	Free . . .	15,076,609.00	3,740,854.00	. . . . .	.248	. . .	13,099,903.00	3,879,724.00	. . . . .	.295	. . .
Total (pounds)	Dutiable .	4,682,824.00	1,449,604.00	217,440.60	.323	15.00	9,349,854.00	2,437,245.00	365,586.75	.261	15.00
Total, Class 2 (pounds) . . . . .	. . . . .	19,759,433.00	5,190,458.00	217,440.60	.263	. . .	22,449,757.00	6,316,939.00	365,586.75	.286	. . .
Class 3 — Donsokei, native South American, Cordova, Valparaiso, native Smyrna, Russian camel's hair, etc.											
Wool, washed and unwashed	Free . . .	63,787,966.00	10,489,187.00	. . . . .	.164	. . .	107,315,043.00	23,456,979.00	. . . . .	.218	. . .
Scoured (pounds)	Free . . .	30,636.00	11,410.00	. . . . .	.372	. . .	393,748.00	110,907.00	. . . . .	.282	. . .
Camel's hair, Russian, washed and unwashed (pounds)	Free . . .	1,651,853.00	349,714.00	. . . . .	.212	. . .	1,729,549.00	426,074.00	. . . . .	.244	. . .
Scoured (pounds)	Free . . .	10,424.00	5,307.00	. . . . .	.509	. . .	. . . . .	. . . . .	. . . . .	. . .	. . .
Total, Class 3 (pounds)	Free . . .	65,479,979.00	10,855,618.00	. . . . .	.166	. . .	109,438,340.00	23,993,960.00	. . . . .	.219	. . .
Total wools, etc., unmanufactured	Free . . .	298,539,076.00	66,581,908.00	. . . . .	.223	. . .	525,194,257.00	140,037,548.00	. . . . .	.267	. . .
Total wools, etc., unmanufactured	Dutiable .	4,682,824.00	1,449,604.00	217,440.00	.323	15.00	9,349,854.00	2,437,245.00	365,586.75	.261	15.00
Total wools, etc., unmanufactured . . . . .	. . . . .	303,312,900.00	68,031,512.00	217,440.00	.224	. . .	534,544,111.00	142,474,793.00	365,586.75	.265	. . .
Manufactures composed wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals—											
or by any process of manufacture, beyond the washed and scoured condition, not especially provided for											
8 per cent,		15,760.00	3,906.00	312.48	.247	8.00	54,523.00	19,040.00	1,523.20	.349	8.00
8 per cent,		15,760.00	3,906.00	312.48	.247	8.00	54,523.00	19,040.00	1,523.20	.349	. . .
Total advanced											
Rags, waste —											
Mungo (pounds)	Free . . .	298.00	33.00	. . . . .	.159	. . .	. . . . .	. . . . .	. . . . .	. . .	. . .
Noils, carbonized or others (pounds),	Free . . .	1,288,791.00	496,885.00	. . . . .	.386	. . .	2,262,220.00	854,320.00	. . . . .	.378	. . .
Rags and flecks (pounds)	Free . . .	2,156,729.00	190,331.00	. . . . .	.088	. . .	1,373,014.00	203,752.00	. . . . .	.134	. . .
Shoddies	Free . . .	32,633.00	4,084.00	. . . . .	.124	. . .	200.00	10.00	. . . . .	.09	. . .
Wastes											
Shibbing, ring and garnetted (pounds)	Free . . .	139,903.00	62,456.00	. . . . .	.446	. . .	75,549.00	36,841.00	. . . . .	.488	. . .
Top, roving and card (pounds)	Free . . .	71,215.00	16,451.00	. . . . .	.231	. . .	28,085.00	5,781.00	. . . . .	.202	. . .
Yarn, thread, bur, and all other wastes, carbonized wool, and wool extract (pounds)	Free . . .	931,048.00	77,504.00	. . . . .	.083	. . .	830,543.00	114,503.00	. . . . .	.138	. . .
Total rags, mungo, flecks, noils, wastes, etc. (pounds)	Free . . .	4,620,531.00	847,694.00	. . . . .	.183	. . .	4,569,621.00	1,215,207.00	. . . . .	.266	. . .

Imports of Wool and Manufactures of Wool, entered for Consumption, Years ending June 30, 1915 and 1916. Quantities, Values, Rates of Duty, and Accruing Duties. — Continued.

ARTICLES.	Rates of duty.	1915.						1916.					
		Quantities.	Values.	Duties.	Value per unit.	Actual and computed ad valorem rate.		Quantities.	Values.	Duties.	Value per unit.	Actual and computed ad valorem rate.	
Wools, hair of the camel, etc. — <i>Continued.</i>													
Manufactures composed wholly or in part of wool, worsted, etc. — <i>Continued.</i>													
Combed wool or tops, made wholly or in part of wool or camel's hair	8 per cent,	3,412,250.00	1,770,917.00	141,673.36	.519	8.00		665,764.00	284,696.00	Dollars. 22,775.68	Dolls. .428	8.00	
Made from the hair of the Angora goat, etc. (pounds)	20 per cent,	66,723.00	25,263.00	5,132.60	.379	20.00		765,621.00	266,208.00	53,261.60	.348	20.00	
Total combed wool or tops, etc. (pounds)	. . . . .	3,478,973.00	1,796,180.00	146,805.96	.516	. . . .		1,431,385.00	551,004.00	76,037.28	.385	13.80	
Yarns —													
Made wholly or in chief value of wool (pounds)	18 per cent,	2,716,021.00	1,957,125.00	352,282.50	.725	18.00		173,208.00	130,184.00	23,433.12	.752	18.00	
Made of hair of Angora goat, etc. (pounds)	25 per cent,	583,383.00	356,652.00	89,038.00	.611	25.00		270,098.00	203,384.00	50,846.00	.753	25.00	
Total yarns . . . . .	. . . . .	3,299,404.00	2,313,677.00	441,320.50	.701	19.08		443,306.00	333,568.00	74,279.12	.752	23.77	
Blankets composed wholly or in chief value of wool (pounds)	25 per cent,	122,226.00	75,795.00	18,948.75	.620	25.00		30,296.00	23,897.00	5,974.25	.788	25.00	
Total blankets	25 per cent,	122,226.00	75,795.00	18,948.75	.620	25.00		30,296.00	23,897.00	5,974.25	.788	25.00	
Carpets and carpeting —													
Aubusson, Axminster, moquette and chenille carpets (square yards)	35 per cent,	40,142.00	121,653.00	42,578.25	3.031	35.00		36,539.00	101,026.00	35,359.10	2.777	35.00	
Brussels carpets (square yards)	25 per cent,	17,239.00	17,909.00	4,477.25	1.039	25.00		4,638.00	5,200.00	1,300.00	1.121	25.00	
Carpets woven whole for rooms, and Oriental, Berlin, Aubusson, Axminster, and other similar rugs (square yards)	50 per cent,	597,177.00	2,529,772.00	1,264,888.00	4.236	50.00		497,538.00	2,185,717.00	1,092,858.50	4.393	50.00	

Druggets and bockings, printed, colored, or otherwise (square yards)	7,489.00 2,485.00	6,131.00 2,509.00	1,226.20 501.80	.819 1.009	20.00 20.00	19,137.00 2,371.00	15,525.00 1,439.00	3,105.80 287.80	.812 .607	20.00 20.00
Felt carpeting (square yards)										
Saxony, Wilton, and Tourmay velvet carpets, square yards	115,312.00	233,568.00	70,060.80	2.025	30.00	73,379.00	170,395.00	51,118.50	2.322	30.00
Tapestry Brussels, printed on the warp or otherwise (square yards)	237,308.00	143,878.00	28,775.60	.606	20.00	105,511.00	111,975.00	22,395.00	1.001	20.00
Treble Ingrain, three-ply, and all chain Venetian carpets (square yards)	4,733.00	4,724.00	994.80	.998	20.00	369.00	444.00	88.80	1.203	20.00
Velvet and tapestry velvet carpets, printed on the warp or otherwise (square yards)	56,167.00	114,315.00	34,294.50	2.033	30.00	25,740.00	70,628.00	21,188.40	2.744	30.00
Wool, Dutch, and two-ply Ingrain carpets (square yards)	1,320.00	1,312.00	262.40	1.07	20.00	557.00	519.00	103.80	.932	20.00
Carpets and carpeting of wool, and flax or cotton, not especially provided for (square yards)	57,885.00	36,277.00	7,255.40	.627	20.00	8,740.00	5,104.00	1,020.80	.587	20.00
Total carpets and carpeting, etc. (square yards)	1,079,876.00	3,212,046.00	1,455,272.30	2.97	45.31	774,519.00	2,667,976.00	1,228,826.50	3.583	46.06
Cloths, woollen and worsted — Wholly or in chief value of wool — (square yards)	17,402,630.00 { cent, {	10,218,109.00 { cent, {	3,576,160.70 { cent, {	.584 { cent, {	35.00 { cent, {	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Worsted — Fancy woven (square yards) . . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	952,362.00	932,600.00	326,410.00	.974	35.00
Plain (square yards) . . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	563,336.00	. . . . .	. . . . .	1.663	. . . . .
Plain (square yards) . . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	865,388.00	615,286.00	215,350.10	.717	35.00
Woolens — Fancy woven (square yards) . . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	3,897,069.00	2,719,997.00	951,998.95	.698	35.00
Plain (square yards) . . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	2,772,452.00	. . . . .	. . . . .	.481	. . . . .
Plain (square yards) . . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	3,610,411.00	2,405,353.00	841,873.55	.667	35.00
Made of hair of Angora goat, etc. (pounds) . . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	2,428,561.00	. . . . .	. . . . .	.990	. . . . .
Made in chief value of cattle or horse hair, n.s.p.f. (pounds)	1,198,319.00	1,266,099.00	506,439.60	1.065	40.00	1,136,802.00	1,255,372.00	502,148.80	1.105	40.00
Total cloths (pounds)	406,013.00	106,941.00	26,735.25	.263	25.00	87,996.00	67,543.00	16,885.75	.758	25.00
Total cloths (pounds)	12,600,396.00	11,591,099.00	4,109,335.35	.919	35.45	7,540,804.00	7,996,151.00	2,894,667.15	1.060	35.70

Flannels for underwear — Wholly or in chief value of wool — Valued at or in chief value of wool — pound (pounds)	25 per cent,	7,365.00	2,069.00	517.25	.283	25.00	352.00	155.00	38.75	.442	25.00
Valued at above 50 cents per pound (pounds)	30 per cent,	127,185.00	125,303.00	37,617.90	.986	30.00	126,752.00	147,223.00	44,166.90	1.161	35.00
Total flannels, etc. . . . .	. . . . .	134,490.00	127,462.00	38,135.15	.948	29.91	127,104.00	147,378.00	44,205.65	1.161	30.00
Knit fabrics (not wearing apparel), wholly or in chief value of wool (pounds)	35 per cent,	652.00	853.00	298.55	1.309	35.00	296.00	398.00	139.30	1.50	35.00
Total knit fabrics (not wool)	35 per cent,	652.00	853.00	298.55	1.309	35.00	296.00	398.00	139.30	1.50	35.00
Laces, embroideries, etc., of wool — Laces, couch, carriage, and auto- mobile	60 per cent,	. . . . .	1,275.00	765.00	. . . . .	60.00	. . . . .	1,444.00	866.40	. . . . .	60.00
All other laces, lace articles, em- broideries, nets, etc.	60 per cent,	. . . . .	36,349.00	21,809.40	. . . . .	60.00	. . . . .	48,372.00	29,023.20	. . . . .	60.00
Plushes, velvets, and other pile fab- rics, etc., made of wool (pounds), Manufactures in chief value of same	40 per cent,	24,034.00	31,289.00	12,515.60	1.302	40.00	10,134.00	14,463.00	5,785.20	1.427	40.00
Plushes and other pile fabrics made from the Angora goat hair, etc. (pounds)	40 per cent,	. . . . .	19,832.00	7,932.80	. . . . .	40.00	. . . . .	27,572.00	11,028.80	. . . . .	40.00
Articles made wholly or in chief value thereof	45 per cent,	151,078.00	191,536.00	86,191.20	1.268	45.00	99,237.00	122,588.00	55,164.60	1.234	45.00
Total plushes, laces, etc.	45 per cent,	. . . . .	52,975.00	23,838.75	. . . . .	45.00	. . . . .	23,681.00	10,556.45	. . . . .	45.00
Press cloth of camel's hair for oil mil- ling purposes, etc.	Dutiable .	. . . . .	333,256.00	153,652.75	. . . . .	. . . . .	. . . . .	188,304.00	82,635.05	. . . . .	43.88
Other n.o.p.f. per pound	Free . . .	157,165.00	79,094.00	. . . . .	. . . . .	. . . . .	89,880.00	50,311.00	. . . . .	.337	. . . . .
	10 per cent,	4,184.00	1,731.00	173.10	.414	10.00	48.00	31.00	3.10	.667	10.00

Imports of Wool and Manufactures of Wool, entered for Consumption, Years ending June 30, 1915 and 1916. Quantities, Values, Rates of Duty, and Accruing Duties. — Continued.

ARTICLES.	Rates of duty.	1915.					1916.				
		Quantities.	Values.	Duties.	Value per unit.	Actual and computed ad valorem rate.	Quantities.	Values.	Duties.	Value per unit.	Actual and computed ad valorem rate.
Wools, hair of the camel, etc. — <i>Continued.</i>											
Manufactures composed wholly or in part of wool, worsted, etc. — <i>Continued.</i>											
Wearing apparel: Clothing, ready-made, and articles of wearing apparel, made up or manufactured wholly or in part, composed in chief value of wool —											
Gloves and mittens valued at not more than \$1.20 per dozen pairs (dozen pairs)	30 per cent.	79,384.00	85,388.00	25,616.40	1.076	30.00	15,094.00	17,736.00	5,320.80	1.175	30.00
Valued at more than \$1.20 per dozen pairs (dozen pairs)	40 per cent.	68,993.00	132,806.00	53,132.40	1.925	40.00	15,562.00	35,058.00	15,223.20	2.253	40.00
Hats of wool (pounds)	35 per cent.	49,081.00	49,081.00	17,178.35	35.00	35.00	43,257.00	43,257.00	15,139.95	35.00	35.00
Knitted articles (pounds)	35 per cent.	136,039.00	136,039.00	47,620.65	35.00	35.00	91,684.00	91,684.00	32,089.40	35.00	35.00
Shawls, knitted or woven (pounds)	35 per cent.	3,901.10	11,146.00	3,901.10	35.00	35.00	8,640.00	8,640.00	1,274.00	35.00	35.00
Stockings, hose, and half-hose made wholly or in part of wool n.o.p.f., made on knitting frames (dozen pairs)	20 per cent.	458.00	550.00	110.00	1.201	20.00	157.00	184.00	36.80	1.172	20.00
Selvaged, fashioned, narrowed, etc., finished or unfinished, valued at not more than \$1.20 per dozen pairs (dozen pairs)	30 per cent.	4,821.00	4,889.00	1,466.70	1.014	30.00	2,577.00	2,493.00	747.90	.967	30.00
Valued at more than \$1.20 per dozen pairs (dozen pairs)	40 per cent.	64,774.00	163,438.00	65,375.20	2.523	40.00	27,876.00	120,985.00	48,394.00	4.340	40.00
Other clothing, ready-made, and articles of wearing apparel, made up or manufactured wholly or in part (pounds)	35 per cent.	1,317,649.00	1,317,649.00	461,177.15	35.00	35.00	817,215.00	817,215.00	286,025.25	35.00	35.00
Ditto	Duty remitted.	2,122.00	2,122.00								

Ditto (reciprocity treaty with Cuba), (pounds)	35-20 per cent,	14.00	3.92	28.00	40.00	11.20	28.00
Ditto (from Philippine Islands) . .	Free				110.00		
Total wearing apparel (pounds)	Free	1,903,142.00	675,572.87	33.54	110.00	404,262.50	35.61
	Dutiable				1,135,292.09		
Webbings, gorings, suspenders, bandings, beltings, bindings, braids, edgings, fringes, gimps, cords, and other trimmings, etc. (pounds)	35 per cent,						
Braids, loom woven or made by hand and ornamented, composed of wool .	60 per cent,	5,781.00	2,023.35	35.00	4,126.00	1,444.10	35.00
All other — wholly or in chief value of wool	35 per cent,	183.00	109.80	60.00	47.00	28.20	60.00
Of the hair of the Angora goat, etc.,	40 per cent,	330,432.00	115,647.00	35.00	301,519.00	105,531.65	35.00
Ditto (reciprocity treaty with Cuba)	40-20 per cent,	95,270.00	38,108.00	40.00	79,254.00	31,701.60	40.00
Total manufactures of wool	Free	929,408.00	9,701,771.96	33.51	1,265,628.00	5,776,934.87	36.37
Total manufactures of wool	Dutiable	28,950,213.00	9,701,771.96		15,885,768.00		
Total manufactures of wool		29,879,621.00	9,701,771.96		17,151,396.00	5,776,934.87	
Total wool and manufactures of	Free	67,511,316.00			141,303,176.00		
Total wool and manufactures of	Dutiable	30,399,817.00	9,919,212.56	32.63	13,323,013.00	6,145,521.62	33.52
Total wool and manufactures of		97,911,133.00	9,919,212.56		159,626,189.00	6,145,521.62	

THE TEXTILE BUREAU.

An office in connection with the work of the Textile Bureau, to prevent the fraudulent undervaluation of imported textile manufactures, has been opened on the sixth floor of the Singer Annex, 95 Liberty Street, New York. Every instance of imported goods sold here at prices that suggest a probability of undervaluation should be immediately reported to the Bureau at the above address.

JOHN P. WOOD,
Director.

BULLETIN

OF THE

National Association of Wool Manufacturers

A QUARTERLY MAGAZINE

DEVOTED TO THE INTERESTS OF THE NATIONAL WOOL INDUSTRY.

VOL. XLVII.]

BOSTON, APRIL, 1917.

[No. II.]

FIFTY-SECOND ANNUAL MEETING OF THE ASSOCIATION.

THE fifty-second annual meeting of the National Association of Wool Manufacturers was held, in pursuance to call, at the Hotel Belmont, New York, at 11.30 A.M., Wednesday, February 7, 1917. President John P. Wood presided.

The Secretary read the minutes of the annual meeting of 1916, which were approved. The report of Mr. William M. Wood, Vice-President, as Auditor, was read, accepted, and ordered to be placed on file. The report of the Treasurer was read and accepted and ordered placed on file.

The report of the Secretary was read, accepted, and ordered to be printed in the Bulletin.

Mr. Jacob F. Brown, in the absence of Mr. Franklin W. Hobbs, Chairman, presented a report of the Nominating Committee, which was duly accepted, and on motion the Secretary was instructed to cast one ballot for the list of nominees as read. Thereupon the President declared these nominees duly elected. The report offered the following list of officers for 1917 :

OFFICERS FOR 1917.

PRESIDENT.

JOHN P. WOOD Philadelphia.

VICE-PRESIDENTS.

WILLIAM M. WOOD Boston.

FREDERIC S. CLARK No. Billerica, Mass.

GEORGE H. HODGSON Cleveland, O.

SECRETARY AND TREASURER.

WINTHROP L. MARVIN Boston.

EXECUTIVE COMMITTEE.

ANDREW ADIE Boston.
 C. BAHNSEN New York.
 CHESTER A. BRAMAN New York.
 FREDERIC C. DUMAINE Boston.
 WALTER ERBEN Philadelphia.
 JULIUS FORSTMANN Passaic, N.J.
 HENRY A. FRANCIS Pittsfield, Mass.
 LOUIS B. GOODALL Sanford, Me.
 EDWIN FARNHAM GREENE Boston.
 JOSEPH R. GRUNDY Philadelphia.
 GEORGE C. HETZEL Chester, Pa.
 FRANKLIN W. HOBBS Boston.
 GEORGE E. KUNHARDT Lawrence, Mass.
 CHARLES W. LEONARD Boston.
 JAMES R. MACCOLL Pawtucket, R.I.
 WILLIAM MAXWELL Rockville, Conn.
 FRANK H. METCALF Holyoke, Mass.
 THOMAS OAKES Bloomfield, N.J.
 NATHANIEL STEVENS North Andover, Mass.
 H. E. STOEHR Passaic, N.J.
 WILLIAM H. SWEATT Boston.

Mr. Clark proposed the following resolution, already approved at the previous meeting of the Executive Committee, which was seconded by Mr. BahnSEN and duly reaffirmed by the Association by unanimous vote :

Resolved, by the National Association of Wool Manufacturers, That, holding yet to the hope that actual war may honorably be averted, we pledge to the government, in case of need, the whole-hearted coöperation of our industry — all else to be subordinate to the interest of the United States.

Mr. Clark reported that the Barkley labeling bill had been taken from the calendar of Congress, but would be brought up in the new Congress, with an excellent prospect of enactment.

President Wood presented a brief report of the work of the Textile Bureau, which had been successful in securing a

decision that samples of imported wool fabrics were dutiable. It had been successful also in securing the inclusion of the cost of shrinkage in the market value of imported wool fabrics, and also in certain test cases on the classification of so-called flannels.

On the subject of the tariff the President suggested that it would not be wise for the minority in Congress to offer a bill for the purpose of making a record, as there was not sufficient time to prepare an adequate measure and much misunderstanding and confusion might result.

The President reported further on the recent work in coöperation with the Textile Alliance.

Mr. Grundy presented a letter from President Bigelow of the Philadelphia Wool and Textile Association summarizing the "More Sheep and More Wool" campaign, with reference to the organization of a bureau to promote the undertaking. The plan called for the raising of an annual income of \$40,000, guaranteed for a period of three years, an annual subscription of \$10,000 being suggested as the share of the National Association of Wool Manufacturers. The question was referred to the new Executive Committee of the Association for proper action.

Mr. Levering urged that the Association should seek further positive action toward the securing of British and colonial wools. After a discussion this matter was referred to the new Executive Committee, some members expressing the opinion that further effort should be made to interest the Department of State to make direct representations to the British government.

The report of the Secretary as read was as follows:

REPORT OF THE SECRETARY.

To the Members of the National Association of Wool Manufacturers:

As required by the by-laws of the Association, the Secretary herewith submits his report for the year ending with the last day of January, 1917.

This year has proved to be one of a high degree of activity in the wool manufacture of the United States, though the difficulties of conducting business have been many and the gains have not been out of proportion to the labor and the risk involved. Because of the continued war in Europe, imports of foreign woolen goods, which so quickly became excessive under the Simmons-Underwood tariff for revenue only in the seven months of 1914 before the war began, have for another year been of no more than normal volume. For the eleven months ending with November, 1916, the last month for which official records are available, the imports of manufactures of wool of all kinds were valued at \$15,240,700, as compared with \$16,017,571 in the corresponding eleven months of 1915, and of \$41,904,044 in the corresponding eleven months of 1914. Because of the war and its far-reaching consequences, there has been a new and unprecedented development of an export trade in American wool manufactures, which in value far exceeds the present imports. These exports last year amounted to \$35,917,147. Latin-America and Canada are the principal markets to which these export goods are going, and the beginning of the trade is due to the inability of these countries to secure their accustomed supplies from Europe. Though these exports are an appreciable factor in the present prosperity of the industry, they represent probably not more than 6 or 7 per cent of the current output of American mills which is and will indefinitely continue to be produced to meet the demands of the home market, by far the greatest and best market for woolen fabrics in the world. The earlier demand for military cloths and blankets from belligerent governments has now wholly ceased, and these governments are now able to secure from their own manufacturers or among themselves all the cloth that is required. It is significant that all the Powers at war, whatever their previous predilections, are now sedulously following a policy of preference or protection to home industries as a vital part of a system of National defence.

But the needs of these warring Powers, especially for

munitions and foodstuffs, continue to exceed their home resources, so that it is still absolutely necessary for them to make abnormal purchases of certain commodities in this country, and thus the somewhat feverish condition of war prosperity is still maintained. There is full employment in most of the great National industries, and the people dependent on these industries are liberal purchasers of woolen fabrics as well as of other manufactured goods of general use. Increased costs of wool, dyestuffs, and other supplies and higher wages thrice advanced in the calendar year 1916 have compelled a corresponding addition to the prices of woolen fabrics, but general conditions are such that these new prices have been promptly paid, and the volume of production of the American wool manufacturing industry has thus far increased and not diminished. But it is significant that the marked activity of recent months has not led to any undue expansion of the productive capacity of the industry, those engaged in the responsible management of wool manufacturing enterprises manifestly realizing the unstable foundations of prosperity in such troublous times as these.

A greater quantity of wool is undoubtedly being manufactured in the United States at the present time than a year ago, and the question of an adequate raw wool supply for another year has become very grave, with the intensifying of the European war, and the declaration of a close embargo by the British government on wools of home and colonial production. Our own country is now yielding not more than three-eighths of the raw wool now required for the American wool manufacture, and for several years past the wool product of the United States has been decreasing or barely holding its own. This is a problem which challenges the immediate attention of the Federal Department of Agriculture and of the agricultural authorities of the various States. Foreign sources of supply are manifestly destined to be more and more uncertain. The wool product of the world as a whole has failed to increase with the growth of population. A keen demand and favorable prices for wool are certain to prevail in all countries for many years to come, and there can be no

more inviting field for the enterprise of American farmers and stockmen. This Association has been active in encouraging the timely and valuable "More Sheep and More Wool" campaign initiated by the Philadelphia Wool and Textile Association, which has enlisted a widening interest, both in the Eastern States and in the great wool-growing States of the Middle West and the Rocky Mountains.

Continuous progress has been achieved in the American art of dyestuff making — progress in quantity and quality alike, though, of course, the dye requirements of the wool manufacturing industry are still far from being fully met by present domestic production. There are still many colors that are not obtainable, and many others that are not produced here in such a form as will permit of the same kinds of application as similar shades of German manufacture. Nor can normal prices be expected through a full development of the industry in the absence of adequate protection after this war has ended. The new dyestuff duties as amended by the anti-protectionist majority in the present Congress are deficient both in method and in amount. It can fairly be said of the dyestuff manufacturers of this country that they have shown an ingenuity and a courage worthy of fairer recognition in the future, and there is reason to believe that the great textile industries of the United States will never again be threatened as they were by the imminent dye famine of 1914–1915.

General tariff legislation is not likely to be undertaken for many months to come, but a special tariff committee has been authorized by the Executive Committee and selected by the President of the Association to make a deliberate and thorough study of the subject, so that the industry may be ready to present dependable facts before the committees of Congress or the proposed Tariff Commission whenever the need and opportunity arise. There are no illusions among manufacturers as to what may be expected as soon as the belligerent nations, after the return of peace, have secured the necessary quota of war-disciplined men in the industries which even without them are credited with having developed

a higher efficiency than ever before. The great war has killed the dogma of free trade, and the one nation of Europe which stood ostensibly devoted to *laissez faire* is, significantly, now the nation which is taking the lead in the adoption of the most extreme measures of protectionism. Any foreign import which severely threatens British prosperity is not merely taxed; it is prohibited, and a large State subsidy is given to create a British dyestuff manufacture.

This year has been signalized in the United States by the formation of the National Industrial Conference Board, a very strong, far-reaching organization whose endeavor is to make the country better understand the true character of the country's great productive businesses and to bring about juster relations between capital and labor. Of this Board the National Association of Wool Manufacturers has been from the first a constituent member, represented by its President and one other delegate. Far-seeing plans are being considered to make this Board a permanent factor of dignity and power in the industrial life of the United States, and to this end the coöperation of an even larger membership is being sought.

Pursuant to the fixed policy of the Association of undertaking any new effort which may be of practical advantage to the industry as a whole, we are moving to secure in a systematic way the rates of wages paid in all occupations in the wool manufacture in the principal districts where it is conducted. This information, carefully tabulated in averages for each district, is to be made available for the use of all manufacturers participating, with a view to bringing about a franker understanding of labor problems, in the interest of employers and employees alike. No such comprehensive study of wage data has ever been attempted either by Federal or State governments.

Under the auspices of the Association, and as directed by the Executive Committee, a Woolen Goods Exchange was established in New York City in July last to apply in the wool manufacture, among those who desired, the principles of "Open Competition," so successfully employed in other

industries. This Exchange, which is open to wool manufacturers without as well as within the National Association, has been testing the plan of "Open Competition" in staple men's wear, broadcloths, uniform cloths, women's wear, and, recently, fancy fabrics, and has developed a genuine interest and a steadily increasing membership.

The Association has continued to coöperate with the Textile Alliance in the agreement by which British and colonial wools, because of war conditions, are imported under license, and this plan has worked satisfactorily throughout the year, though new problems will have to be met in view of the taking over of this wool product by the British government, which has lately signified that a certain amount will be allotted to the United States.

Every quarter the Association continues to secure and distribute a statement of the wool manufacturing machinery active and idle throughout the country, and every month an analysis of wool and manufactures of wool imported. These records constitute a graphic portrayal of the actual conditions of the industry year by year, and are, therefore, of growing value and manifestly more and more appreciated. An annual review of the wool production of this country and the world is still prepared and published by the Association, though the estimate of the American product is now made not by us, but, at our request, by the Federal Department of Agriculture. The general traffic representative of the Association has been busily engaged throughout the year in various traffic problems, a work in which his services are more and more utilized by our manufacturers. An earnest and apparently successful effort has been made, in coöperation with other industries, to secure the continuance of the lake steamboat lines, forming so important a link between the great West and the Eastern manufacturing communities, and an emphatic protest was entered on behalf of our Association against the disruption of the present railroad-owned steamboat services between New England and New York via Long Island Sound.

Besides periodical articles on technical themes, the quarterly Bulletin of the Association is presenting a series of

illustrated papers on the textile schools of the country, their equipment and their purposes — beginning with a description of the well-known pioneer institution in Philadelphia. In the pages of the Bulletin, or in special reports and memoranda, the Association is constantly meeting inquiries for information from officials of the government, from writers on economic or sociological themes, and from manufacturers, and the friendliest coöperation is maintained with the representative organizations of other textile industries.

During the absence of Colonel John P. Wood, our President, in command of the First Pennsylvania Cavalry in the United States service on the Mexican border, Mr. Frederic S. Clark of Massachusetts, Vice-President, has been acting President of the Association for a portion of the year.

I wish particularly to express to both Colonel Wood and Mr. Clark the obligation of our office for counsel and guidance. It has been a year of broadening activities, which, I trust, may prove to be of some substantial benefit to the industry for which the Association stands.

Respectfully submitted,

WINTHROP L. MARVIN,
Secretary.

THE RHODE ISLAND SCHOOL OF DESIGN.

ITS WELL-EQUIPPED AND SUCCESSFUL TEXTILE DEPARTMENT IN PROVIDENCE.

By ARTHUR F. FERGUSON, Head of the Department.

(This article upon the Department of Textile Design in the Rhode Island School of Design of Providence is the second in the series of papers on the important textile schools in the United States. The series will be of particular interest to manufacturers. The next article will deal with the Lowell Textile School of Lowell, Mass.)

THE success of American education lies in its willingness to be of service and its sensitiveness to the changing demands of the times. Yet with this flexibility it is equally true that the principles behind and in control of educational expansion should be of such breadth and clearness that they must always hold true.

It is significant that the founders of the Rhode Island School of Design with wise forethought determined as its objects:

First. The instruction of artisans in drawing, painting, modeling, and designing, that they may successfully apply the principles of art to the requirements of trade and manufactures.

Second. The systematic training of students in the practice of art, that they may understand its principles, give instruction to others, or become artists.

Third. The general advancement of art education by the exhibition of works of art and art studies, and by lectures on art.

To these broad principles the School of Design has constantly adhered, finding continually new opportunities for expansion and increased usefulness in their application.

The history of the institution is one of constant growth. It was incorporated in April, 1877, and began work the following autumn. As in the case of other schools the beginnings were small, but the school was soon able to prove its worth. As the number of students increased the school expanded in buildings and equipment. At first the emphasis was laid on work in drawing and painting, but the fact was early recognized that a decided effort must be made to be of assistance to the special industries of the State. As a result, there have been developed strong departments of Mechanical Design, Jewelry and Silversmithing, and Textile Design, provided not only with buildings, but with the practical equipment.

In addition the Rhode Island School of Design further expanded its usefulness by developing a museum of fine and industrial arts which now ranks high in the list of useful and growing institutions. This feature is a decided advantage both to the student and the public. Special attention has been given to forming a large and beautiful collection of textiles which are constantly used by the students.

THE DEPARTMENT OF TEXTILE DESIGN.

The Department of Textile Design was started in response to a continued demand for instruction in textile design and manufacture.

The keen competition for control of the markets of the world, which will inevitably come at the end of the present war in Europe, must find American manufacturers ready. The amalgamation of German dyestuff interests with government financial assistance and the granting of a large subsidy by the British Parliament for creating British dyestuff corporations immediately present complications in the procuring, economically, of dyestuffs for American consumption. The practical repudiation of free trade by Great Britain, together with the agreements between certain British and French manufacturers for the exchange of trade secrets, makes an opposition that will be hard to overcome. Low-producing

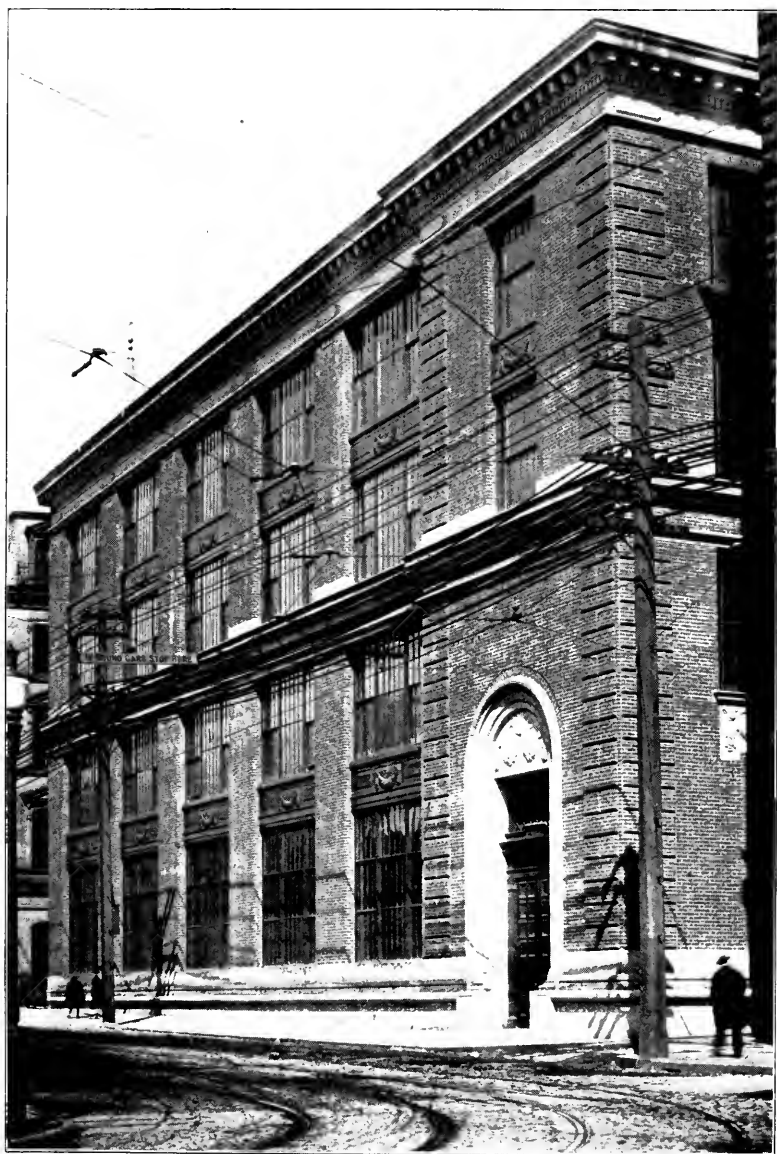
cost of textiles in Europe is a factor to be considered in the cost of American fabrics.

THE TEXTILE SCHOOL.

Omitting the possibility of American textile manufacturers for procuring a just and equitable tariff to protect the future of our textile industry, action must be taken to meet European manufacturers on their own ground. This preparedness should consist of, first, well-trained operatives in running machines, as well as with understanding fundamental principles; second, careful management by departmental heads with a knowledge of the particular department over which they have control, with comprehension of the entire process of textile manufacture from the preparation of the raw material to the production of the finished fabric; third, watchful control of manufacturing costs by a corps of office men competent to detect leaks in any department and willing to assist in a methodical and economical running of the mill. This combination leads to *efficiency*, a large asset in modern mill methods.

Instruction of an operative in his duties has always been a part of mill management. The usual methods have been haphazard and the training of the operative has consisted of what he could pick up by observation or imitation. "An opportunity to have the machinery explained and demonstrated in the mill is rather a matter of favoritism than of general practice." Learning in this way is a long operation and seldom results in the highest efficiency of man or machine.

In the early days of the textile industry in the United States the variety of fabrics made was small. Many mills made one kind of cloth, simple in character and of one kind of fiber. The rapid development of the industry in recent years has shown that combinations of wool, cotton, and silk can be artistically and economically produced. Experiments in fancy textiles can be made satisfactorily only by men trained in the making and dyeing of yarns, with an "eye for color," and thoroughly familiar with ornamentation and design.



Jesse Metcalf Memorial Building, Rhode Island School of Design.

Mill accounting in our grandfathers' day consisted of accounts payable on one page, accounts receivable on the opposite page. The financial condition of the mill was equal to the difference of the totals of the two pages after including the stock in process and finished product on hand as assets. The modern mill could hardly exist without its cost system, even if occasionally the system is more detailed and complicated than it should be to get best and quickest results.

Dyeing and finishing has advanced along with the other departments of the mill, and to-day the chemical laboratory is growing in popularity.

The hiring of trained technical men for higher positions is most desirable to help lift the mill out of the old-fashioned hit-or-miss methods of the industry to its present state. The mission of the textile school is to fit men for these positions. Textile schools have passed through the experimental stage and rank with the best technical schools of the country. Much has been learned since the establishment of textile education in the United States.

Although of comparatively recent inauguration, the textile school connected with the Rhode Island School of Design in Providence has been most successful. Beginning in a small way on the lower floor of Memorial Hall with a few hand and power looms installed as an experiment, it hoped to meet the approval of the manufacturers of Rhode Island. The manufacturers were gratified at our beginning and showed their interest by generous donations of machinery and stock. They increased the weave room equipment and in 1913 opened a cotton yarn department of eight machines. Chemistry and dyeing were located in a separate building. The department outgrew its old quarters in 1915 and now, through the generosity of his sons, occupies the Jesse Metcalf Memorial building, situated in the business section. This makes it most easily accessible for out-of-town students.

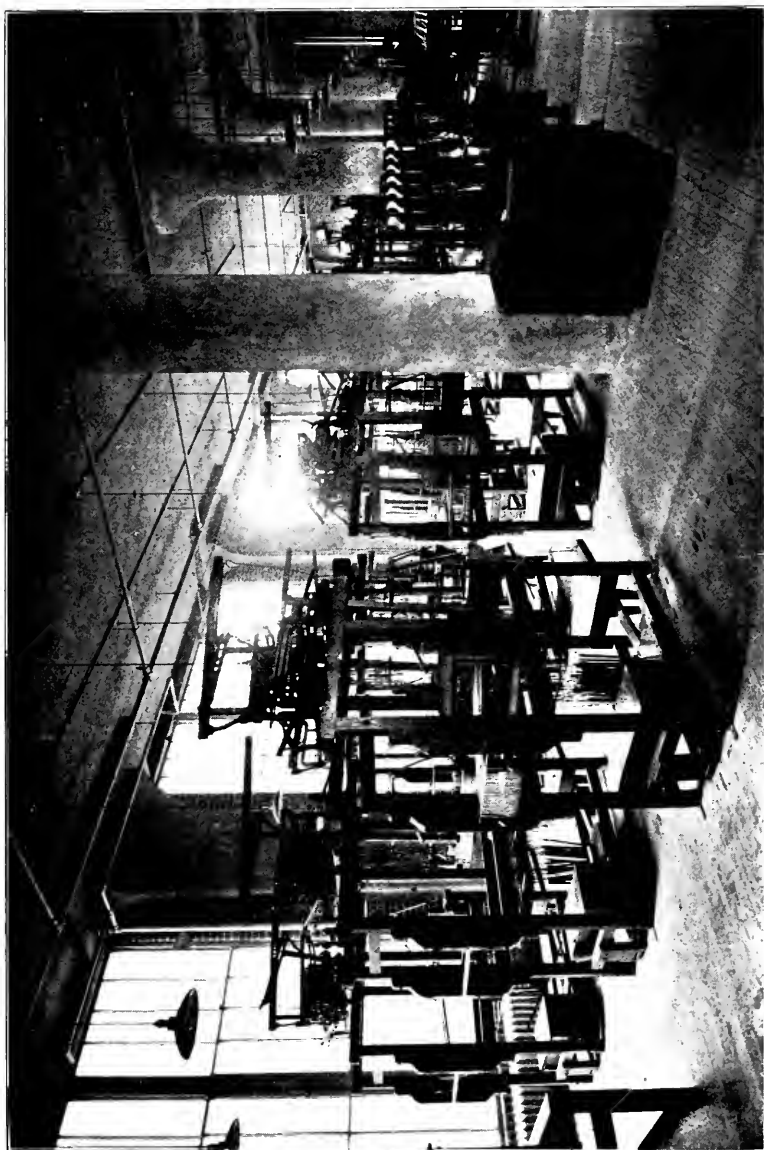
This beautiful new building is a splendid sample of modern mill construction. The first floor contains the warp preparation and weaving department. The equipment at present consists of twenty-six hand looms, sixteen power looms of



Class in Textile Chemistry, Department of Textile Design, Rhode Island School of Design.

different kinds, winding and dressing machinery, and machines for card cutting. The second floor is given over to chemistry and design class rooms. The exhibition room and office are also on this floor. The third floor contains the cotton yarn manufacturing department equipped with a card, three processes of drawing, slubber, intermediate fine and jack frames, spinning frame, wet and dry twister, sliver, lap, comber, spooler, and winding machines. The recent addition of a humidifying system has added greatly to the value of this department. The fourth floor will eventually be occupied by woolen and worsted yarn manufacturing machinery. The basement is used for dyeing, with sufficient space for finishing machinery.

Full courses in General Textile Design and Power Weaving and courses in Textile Dyeing and Cotton Spinning are offered. The General Textile Design course is complete and includes all textile subjects required for the training of a high-grade technical man. While instruction is given in theoretical and practical work, theory is considered a means to make practice easier and more efficient. Special attention is given to costs, such as planning and analyzing systems applicable to certain conditions; and frequent problems are given covering costs and processes from raw material to finished cloth. Students are trained as efficiency men with a working knowledge of each department. The necessity of supplementary work in the mill during the summer vacation is impressed upon the student, and temporary situations are found for ambitious young men. A graduate of a textile school is apt to think that he is competent to fill any position without adjusting himself to mill conditions. Graduates of this department are advised to start in one of the lower positions and work through each room of the mill. It is supposed that with their previous school training this will be a short process. The greatest obstacle to be met will be the antagonism of the old school mill "bosses" to anything so modern as a technical education; this fortunately is a feeling which is dying out. A textile graduate may not be as far advanced as a mill operative who has worked in the mill for the same



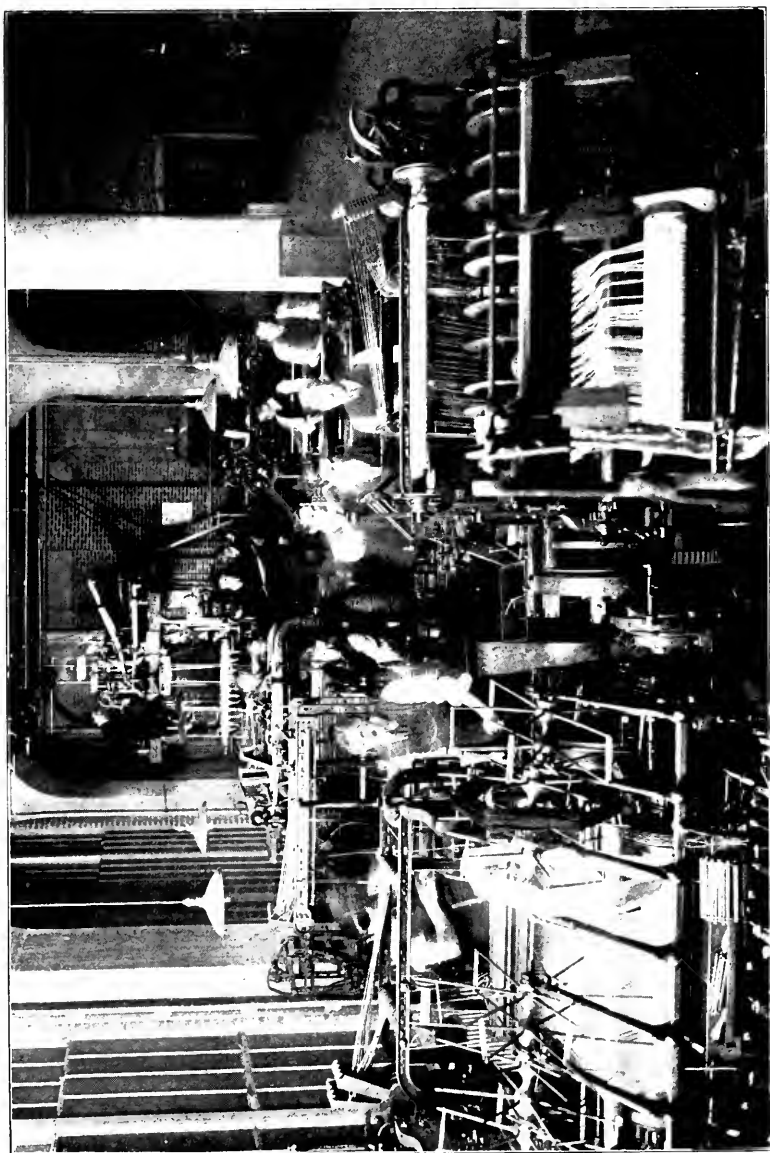
Hand Looms, Weave Room, Department of Textile Design, Rhode Island School of Design.

length of time, but at the end of two years' work in the mill the technical man, by applying his school knowledge to his daily work, has advanced so that the operative is left far behind. It is not always necessary for a man to be a brilliant success at the very start to show his true value. On the other hand, a man often makes good at the beginning, when he goes from Commencement directly into a mill. He is frequently able to bring new blood into the organization, and, while remembering that he must adapt himself to the mill, gradually to bring it to a higher plane of efficiency. The future of a graduate's career is the basis for a series of lectures in the Rhode Island School of Design Textile Department.

The possible correlation of mill and school interests may be shown by the following examples: One evening a student attending his class informed the instructor that a table of constants used in the weave room of his mill had been destroyed. The boss weaver relied upon this table to figure his production. Although used daily no one in the weave room had troubled to find the why and wherefore of the constant table, the regular use of which had caused the longer method of calculating production to be forgotten. Loom production was given as class work that evening. The following morning the student, a second hand, was able to present his boss with a table of constants based on that weave room's conditions.

A superintendent of a small mill also attended evening school. His loom production averaged 60 per cent. After studying efficiency at the textile school and applying his knowledge to his own mill, he was able to increase his production first to 65 per cent, and finally to 70 per cent, without altering the running of his weave room.

A textile school graduate visiting a mill in the Middle States was informed by the agent in course of conversation that the tariff had caused a loss of \$8,000 to the mill during the past year. The graduate asked the mill man if he had experienced any trouble in the weave room and was not surprised to learn that two different boss weavers had been hired



Weave Room, Department of Textile Design, Rhode Island School of Design.

within three months. A slight examination of books gave the information that costs were figured on the last year's production, an abnormal year for that mill. The present year's production was 65 per cent of the previous year. The sudden conversion of that mill man to textile school work was convincing.

The Department is strengthened by being interrelated with the other branches of the school. This not only gives a wider point of view, but leads to the creation of better work. Senator Lippitt said in his address at the opening of the new building, "America has now passed by the period when her development need be limited to useful things that depend mainly on machinery for their merit. The beauty, as well as the usefulness and low cost of her products, must be considered." For this result the study of the beautiful textiles of the world under the direction of competent teachers is indispensable.

There is full proof of the need of a textile school in Rhode Island. Quotations from a recent United States Census Report show the following condition of the textile industry in this State :

	Establishments.	Wage Earners.	Rank.
Cotton.....	106	employing, 28,786	4
Woolen.....	88	" 24,924	3
Dyeing and finishing	45	" 7,792	3
Knit goods.....	17	" 1,774	15
Silk	13	" 1,685	6
Total	269	64,961	

	Production, Value.	Rank.	Value Added by Manufactures.	Rank.
Woolen	\$74,600,240	3	\$23,574,864	2
Cotton	50,312,597	4	24,911,358	2
Dyeing and finishing...	13,955,700	3	8,626,419	3
Silk.....	4,584,431	6	1,396,746	6
Knit goods.....	3,865,792	11	1,421,335	14
	<u>\$147,318,760</u>		<u>\$59,930,722</u>	

At least 75 per cent of the wage earners of Rhode Island can reach the school by traveling forty-five minutes.

The Textile Department receives an annual appropriation of \$10,000 from the State of Rhode Island, and contributions of practically the same amount from the manufacturers. The State also gives \$16,000 in scholarships which are open to all departments of the school.

The Rhode Island School of Design is not working for the largest textile school, but for the best. As one manufacturer has stated, "We do not want a museum for textile machinery." Every machine in the Rhode Island School of Design is used, not once a year but almost continually. The coöperation and interest of the manufacturers has been a great factor in the growth of the Department to its present efficiency. A continuation of this interest will go far towards making the textile school in Rhode Island the success it should be.

THE WOOL INDUSTRY—ITS COMMERCIAL PROBLEMS.

A NOTABLE NEW WORK FOR MERCHANT AND MANUFACTURER.

By PROFESSOR CHERINGTON of Harvard University.

UNDER the title of "The Wool Industry—Commercial Problems of the American Woolen and Worsted Manufacture," Dr. Paul T. Cherington, Assistant Professor of Marketing in the Graduate School of Business Administration of Harvard University, has prepared and presented a work of unique interest to the wool growers, merchants, and manufacturers of the United States. As Professor Cherington says, the breeding of sheep, the growing of wool, the mechanical processes of cloth manufacture and even the bearings of the tariff on the industry have been well covered in previous publications. This new work embodies the results "of an examination of the industries producing woolen and worsted fabrics approached from the side of their buying and selling problems." It is the first time in the history of the industry that such an effort has been attempted, and no more than incidental attention to the tariff, to technical manufacturing, etc., is given in the present work.

But the author does offer a concise historical sketch of the woolen and worsted manufacture. It is excellently done and will prove to be of very direct interest to most readers. Professor Cherington considers further the chief sources of the world's wool supply and the domestic and imported supplies of American manufacturing. He outlines the methods of marketing wools in this country and in other countries of important wool production. Of the main effects of the present free-wool policy on our territorial wool industry he predicts "First, the abandonment of the industry by all except the ablest and most progressive sheep men; second, the survival, even among the competent ones, only of those who are willing and able to adopt new and scientific meth-

ods; third, a probable acceleration of the movement already manifest to increase the mutton strain in our territory flocks (resulting in a relative increase in the country's output of coarser wools, and a relative increase in the annual movement of lambs into the corn belt in the fall for winter feeding); fourth, increased attention to care in breeding and in the preservation of flock standards; and fifth, marked improvement, which is already manifest, in the methods of preparing the fleeces for the market. These changes alone would put the American woolen and worsted manufacturer on an entirely new basis so far as the purchase of his American wools is concerned."

As to the attitude of American manufacturers toward the native wool growing industry, he quotes this letter of Mr. William M. Wood, President of the American Woolen Company, to Hon. James Wilson, Secretary of Agriculture, on January 28, 1910:

We manufacturers want to use American wool, but we have increased difficulty in securing enough for our purposes. The imports of last year were twice the imports of the year before and the American wool production rose only from 311,000,000 to 328,000,000 pounds.

There are 258 sheep to the square mile in the United Kingdom, and there are only 9.6 sheep to the square mile in New England. Here is a condition which is well worth the while of your Department to take some vigorous measures to equalize. Our New England hills are certainly as well adapted to the growth of sheep as the hills of Old England and Scotland. There is a great market for mutton here in the New England States, and an immense industry of manufacturing. But we cannot get enough American wool, and we prefer American wool and would use a much greater quantity if we could secure it.

Just consider these significant figures of the number of sheep and the wool production in New England in 1891 and 1909:

	1891.		1909.	
	Sheep.	Wool (pounds).	Sheep.	Wool (pounds).
Maine	547,670	3,286,020	210,000	1,260,000
New Hampshire	183,183	1,099,098	70,000	434,000
Vermont	351,249	2,458,743	180,000	1,170,000
Massachusetts	55,965	335,790	35,000	210,000
Rhode Island	20,433	122,598	7,500	39,750
Connecticut	45,824	229,120	38,000	190,000
Total New England	1,204,324	7,531,369	540,500	3,303,750

We have lost one-half of our sheep in New England since 1891, and one-half of our wool production. There has been some increase in the regions farther West, but that gain has not been so large as it ought to be and there ought not to have been any reduction in New England. If proportionately to the area there were as many sheep in New England as there are in the United Kingdom, instead of 540,500 we should now have 15,000,000 sheep grazing on our northern hills. What this would mean in the way of advantage to American manufacturing, the improvement of the land, and direct and indirect benefits to New England agriculture you can readily grasp.

In a review of the part played by the wool merchant, Professor Cherington emphasizes the greatly increased importance of the business when he points out that "The quantity of wool consumed in the United States is now over five times as great as it was in 1860." He states further that "The actual work performed by the wool merchant is an important and complicated service." He traces the history of the ill-starred New York Wool Exchange, and finds much more encouragement in the plan of the National Wool Warehouse & Storage Company of Chicago, and in the new great wool warehouse in Boston. In conclusion Professor Cherington declares that:

The place of the wool merchant as an intermediary between the wool grower and the wool manufacturer in this country seems to be firmly established. He performs a function which

cannot be performed either safely or satisfactorily by grower or manufacturer except in isolated cases, and, on the whole, he does well his risky and complicated work. If the wool-marketing methods of the United States are capable of material betterment it is along the line of increasing the efficiency of the wool merchant's methods and equipment, and not by the elimination of this type of middleman.

The only other apparently possible modification of the generally accepted methods for marketing raw wool is that which might be expected to follow complete reform in methods of breeding and packing domestic wools.

If economic pressure should put a stop to the careless methods of growing and packing wools which have characterized the American industry for so long, and if the possibilities of substantial profits from wool growing under better methods should be demonstrated beyond dispute, then it would not be long until domestic wools would appear in the market on an entirely new basis. Much of the present speculative element of the wool merchant's function would be gone. Auction sales, both at local points in the West and at the chief eastern buying centers would become both feasible and desirable.

Whether this would mean the "elimination of the middleman" and more direct contact between growers and mills is by no means certain. But it is certain that much of the speculative lure would be removed from the wool merchant's business as it is at present conducted. As an assembling business done on a narrow margin and depending on volume for profits, wool-dealing might not be as attractive a business as it now is. It might still perform an indispensable function and do it more effectively and at less cost than it could be performed by direct sale. Better wool growing, better wool, and better preparation for the market may mean radical change in the work of the wool merchant, but they do not necessarily involve his extermination.

Before proceeding to consider the distinct commercial and selling problems of the wool manufacture, Professor Cherington gives a brief description of the technical processes, especially those which differentiate the carded woolen and worsted branches of the industry. He states a manifest truth when he says that "Plain standard cloth which can be produced in enormous runs is obviously the sort of product best

adapted to the type of manufacturing in which American genius has had great success." This was also the opinion of the Tariff Board of 1911-1912. In his conclusion he urges that while American manufacturers of woollens and worsteds in the main have followed closely the course of corresponding industries in Europe, "it is also true that American mills and American machinery builders have made many valuable contributions in the way of improvements in machines and improvements in mill construction, mill organization, and mill policy."

In a consideration of the interaction between mill and selling problems, the author of this work points out that the increased use of broad looms, even for dress fabrics, is due to the fact that more than 50 and probably from 60 to 70 per cent of the dresses worn by ladies nowadays are bought made up, and that the manufacturers of ready-to-wear or made-to-order garments require wide goods which have to be made on broad looms. The lighter weight of fabrics now made compared with those of years ago he justly finds to be attributable in chief part to heated cars and trains, steam-heated apartments, and revised ideas of hygiene. Another factor is the better draping effect possible with these lighter fabrics. He makes a just differentiation when he states that "In staples the commercial emphasis is on volume, while in fancy products the emphasis is on the other elements, such as speed of sale and the covering of style risk."

One of the most significant chapters in the book is that dealing with the organization and methods of the selling house, in which Professor Cherington traces the evolution of the commission merchant from the early years of the last century, as illustrated in the experiences of the Appletons and of the Lawrences. He finds it "difficult to describe with accuracy" the textile selling houses or the commission houses of the present day because of the variation of their work and organization, "apparently due largely to historical influences." Thus "the history of the commission house gives the best explanation of the large amount of interownership which now prevails. At least one Boston commission house makes it

a rule to have effective representation in the control of each mill for which it sells. A certain Boston house has one member who is treasurer of three of the mills for which it sells, while another member holds the same position in three other mills. In another Boston house one member of the firm is treasurer of one mill, director of a second, and a large stockholder of a third."

Quite as important as the selling work of the selling house often is the banking service, taking the form most usually of endorsement of the mill's paper, guarantee of the mill's accounts, or direct advances of money. Professor Cherington illustrates the character of the work of the selling houses by a description of the organization of some of the most important houses like that of William Whitman Company, Inc., and he presents a full analysis of the selling organization of the American Woolen Company, with its headquarters in New York city. And in summarizing he cites the fact familiar to the trade that direct selling departments or agencies have in many instances displaced the older form of selling houses, especially in the case of the larger mill corporations.

On the subject of imported fabrics the author relates as typical of conditions even at the present day the selling troubles of the old pioneer Scholfield Mill at Pittsfield as far back as 1804. Scholfield had tried in vain to sell some mixed gray broadcloth to the merchants of his own village. A few weeks subsequently, "Josiah Bissell, a leading merchant in town, made a voyage to New York for the purpose of buying goods, and brought home two pieces of Scholfield's cloth which were purchased for the foreign article. Scholfield was sent for to test the quality, and soon exhibited to the merchant his private marks on the same cloth which he had before rejected."

Many an American manufacturer of the present time has had a similar experience when a merchant or a tailor has offered him his own goods as imported — and has thereby endeavored to extract a higher price for them. This exploiting of imported as against American-made woolens has always offset in large part the tariff protection given to the

industry, and as Professor Cherington states, "The figures for the value of the products of the American woolen and worsted industry show that the period of slow growth of the industry corresponds quite closely with the period of large imports, while the decade of most rapid development, 1900-1910, corresponds with the years when imports were seriously restricted."

Further Professor Cherington describes the experience of clothing manufacturers under the low duties of the Simmons-Underwood tariff act when medium grade European fabrics imported in large quantities were brought into direct comparison with American goods of the same type, with the result that the American goods demonstrated superior intrinsic qualities. In this connection Professor Cherington cites a number of instances from the pages of the quarterly Bulletin of the National Association of Wool Manufacturers, showing that clothing manufacturers and others in this country "were very quick to discover the fact that imported fabrics were not necessarily better for the use of the American cutting industries than American fabrics of corresponding grade, if, indeed, they were as good." Though in the higher grades of goods "the peculiarities of fashion still give imported fabrics an advantage," "even in these lines," Professor Cherington concludes, "there is evidence that American mills have developed a high degree of skill in fabric production. There are many high-grade fabrics being produced in this country which are the equal in actual structure of the corresponding imported fabrics."

The place of the dry goods jobbing trade in the distribution of wool textiles and the marketing of women's piece goods is clearly described, and a particularly interesting chapter is that devoted to "Styles as a Factor in the Marketing of Women's Piece Goods," with its description of the methods of the couturiers of Paris. Another chapter deals with the ready-to-wear clothing industry. Though brief, this description of one of the most characteristic industries of the United States is clear and admirable. Nowhere else has the development of the ready-to-wear industry and its

evolution in various branches been more justly treated than by Professor Cherington. It is a remarkably accurate picture of this wonderfully live and successful business which he presents.

He traces also the development in the last forty years of the department store, such an important factor in general textile distribution. "The piece goods business done by department stores," says Professor Cherington, "shows, in most markets, a decided tendency to decrease. In that portion of the piece goods business which remains, there is an evident increase in the relative importance of fancy as compared with staple fabrics. This has the effect of forcing both large and small retailers to stay out of the cloth market as long as possible, and then to buy as little as possible. At the same time it forces them to dispose of their stocks at a sacrifice if they should be caught with merchandise on hand which proves to be unpopular." He notes also as a comparatively new phase of the development of dry goods retailing the growth of specialty stores carrying wide, full stocks limited to a few lines.

In offering his conclusions, Professor Cherington reminds his readers that much of the material for his book was gathered before the opening of the European war, and that just as the Civil War in this country changed the American woolen and worsted industry in many ways, the European war will no doubt change many of the aspects of the industry in this as well as in other countries. For one thing, "the present situation makes more conspicuous than ever before the military strategic value of an American wool growing industry," and also "emphasizes the desirability from a military standpoint of independence for the United States in its manufacture of wools and worsteds." On the other hand, the war has demonstrated our dependence on Europe for certain parts of our machinery equipment, which, however, we seem to be getting on without. But our past dependence on Germany for much of our dyestuff supply is a very much more serious problem.

We cannot agree with Professor Cherington in his propo-

sition that it is still "a matter for dispute whether the military argument in favor of making the United States more nearly self-dependent as a producer of woolen and worsted cloth would alone justify attempts to extend, or even to preserve, our wool growing and wool manufacturing industries." It seems to us that our national experience since the European war began is absolutely conclusive on this point. The American people require fully \$500,000,000 worth of woolen fabrics every year for personal use or as rugs and carpets. The conflict across the Atlantic has had the effect of limiting imports of wool manufactures to less than \$30,000,000 worth every year. These apparently were all the goods which Europe could spare from its own needs. The condition of the American people if they had no wool manufacture of their own and were compelled to rely upon whatever Europe could vouchsafe to us in time of war would be very grave after a year or two of combat, and absolutely appalling if we were ourselves engaged. There are other and weighty general economic considerations, but hereafter, in the light of the European conflagration, the case for protecting and preserving the American woolen industry might well be left by its friends to rest on the war aspect alone. With thinking men that of itself ought forever to be sufficient for the purpose.

Professor Cherington is right in concluding that wool growing in the United States has far less justified itself than has wool manufacturing. After many years of tariff protection, the woolen machinery of this country is capable of producing all of the woolen fabrics required by the American people. But the farms and ranches of this country supply less than one-half of the wool needed for domestic consumption. Higher standards in the wool-growing industry, more energy, more care, more real scientific effort, are recommended by the author as absolutely indispensable. As to manufacturing, Professor Cherington declares that the last ten years have seen remarkable changes in methods. "Mechanical efficiency of production in at least the staple lines has been greatly increased. The more progressive companies have bettered their internal organization and administration.

It is in the buying and selling activities of the American woolen and worsted industries that there seems to be the most promising field for the expenditure of effort designed to enable these industries to meet the conditions which apparently will develop as a result of the war."

There are two things which the author especially urges American manufacturers to do — first, to attack some of the most obvious evils which exist in present selling methods, and, second, to make a systematic effort to show the American public the actual advance achieved in the production of really high-grade fabrics in this country. Professor Cherington mentions also as worthy of consideration concerted effort to secure adequate governmental protection for designs and more business-like methods in the development of styles and fashions. "The recent attention given to the coördination of resources in military affairs," says Professor Cherington, "suggests the possibility of calling upon American artists and designers in various lines to establish a board of style strategy, to study style motifs, and then to introduce a greater degree of sanity into the setting and exploiting of styles and fashions."

This significant new work is published by A. W. Shaw Company of Chicago and New York, and is dedicated to Professor Edwin Francis Gay, Dean of the Graduate School of Business Administration of Harvard University and the editor of the series of "American Industries — Studies in Commercial Problems," of which "The Wool Industry" is number one. Professor Cherington has done his work with high intelligence and manifest zeal for the fullest and most exact information. His book is fair, scholarly, and practical, and it is unreservedly to be commended to the widest possible reading among the leaders of the wool-growing industry and the wool merchants and manufacturers of the nation. The university, too often imagined as aloof from or antagonistic to actual business, comes very close to business in a quickening and helpful spirit in the pages of this book.

WINTHROP L. MARVIN.

ACTIVE AND IDLE MACHINERY.

NO MATERIAL CHANGE IN RELATIVE CONDITIONS.

ATTENTION is directed to the close correspondence shown in the percentages of idleness in the report for March 1 to those contained in the statement for December 1 preceding. The present statement does not contain the figures for the actual amount of machinery reported at that time, which appears from our records to be very nearly the same in most of the items at both dates. There is, however, a considerable increase in the number of carpet looms reported and also some increase in the total number of worsted spindles. The percentages of idle machinery in the several lines indicate a slight increase in employment. The principal differences appear in the carpet and the worsted spinning branches of the industry. In the carpet manufacture the percentage of idleness is 3.8 less than it was three months ago, while in the worsted spinning the idleness is 2.1 greater. If the comparison is based on all the looms, both broad and narrow, taken together, the percentages are almost identical, being practically 12 per cent in each case. The following table gives the total amount of machinery reported, with the proportion of idleness in each group, and the percentage of idleness in each quarter beginning with June 1, 1915 :

MACHINERY.	Total Number Reported.	In Opera- tion.	Idle.
	March 1, 1917.		
Looms, wider than 50 in. reed space	43,031	37,261	5,770
Looms, 50 in. reed space, or less	13,676	12,597	1,079
Looms, carpet	2,951	2,475	476
Woolen cards, sets	3,482	3,265	217
Worsted combs	2,010	1,847	163
Woolen spinning spindles	1,206,343	1,125,243	81,100
Worsted spinning spindles	1,814,593	1,599,937	214,656

There is probably as little wool manufacturing machinery idle at present as is ever likely to be the case in normal times, for the exigencies of the manufacture are such that a portion of the machinery in the busiest of mills is frequently obliged to be out of commission for one reason or another. It was remarked three months since that the demand for the services of American mills to produce uniform cloths, blankets, etc., for foreign armies had entirely ceased. There has been no resumption of this business since. It is apparent that the Allies have so organized their cloth manufacturing industries as to enable them to supply their armies' needs without calling in outside assistance. Our official Commerce Reports, however, show that American mills are doing a respectable business in the export of their products. In the month of January, the last month for which the statistics are at hand, we exported wool manufactures, not including wearing apparel or rugs, to the value of \$1,280,597, and in the seven months beginning July 1 last these exports equalled \$7,500,785 in value. But the official reports do not state either the kinds of goods exported or the countries to which they are sent. Our exports of wearing apparel are very considerable and go mostly to Canada. With the natural requirements of the American public, the foreign trade, as shown above, and the demands that our own military activities will make upon our manufacturing facilities, it is quite apparent that our mills will be taxed to the extent of their ability for a good while to come.

MACHINERY.	Per Cent of Idle to Total Reported.							
	Mar. 1, 1917.	Dec. 1, 1916.	Sept. 1, 1916.	June 1, 1916.	Mar. 1, 1916.	Dec. 1, 1915.	Sept. 1, 1915.	June 1, 1915.
Looms, wider than 50 in. reed space . . .	13.4	12.8	18.	13.9	12.1	16.8	26.7	30.4
Looms, 50 in. reed space, or less . . .	7.9	9.4	10.6	6.7	7.7	20.2	31.2	25.9
Looms, carpet . . .	16.1	19.7	26.	17.6	17.1	19.6	24.	24.5
Woolen cards, sets . .	6.2	8.3	10.9	12.7	7.3	8.8	15.5	17.7
Worsted combs . . .	8.1	9.2	12.9	10.	7.9	14.2	14.	30.
Woolen spinning spindles	6.7	7.8	13.3	9.8	9.3	8.6	14.2	17.4
Worsted spinning spindles	11.8	9.7	10.8	11.	7.9	15.6	17.	39.6

COÖPERATING WITH THE GOVERNMENT.

WOOL MANUFACTURERS OF THE COUNTRY PROMPT IN
ACTION TO MEET THE WAR CRISIS.

FACE to face with a great foreign war, the government of the United States is in need as never before of the active coöperation of its great national productive industries. That there would be such a need, and that long in advance of it there ought to be some systematic preparation, was the theme of an address, more than a year ago, by Colonel John P. Wood, the President, at the fifty-first annual meeting, on February 9, 1916, of the National Association of Wool Manufacturers. Colonel Wood remarked that it was more as a vision than as a recommendation that his views were presented, but that he believed the subject to be a great and urgent one, not only from present, but more from impending events. There had already been suggestions in high official quarters of the importance of some consideration of an effective mobilization of the country's industrial resources. An inquiry blank had been sent by the War Department to woolen mills asking for information as to the productive capacity of the mills addressed, both under former conditions and under the pressure of an emergency. Colonel Wood stated that he feared that a procedure along such lines would be quite barren of practical results, and he urged that if the government desired to accomplish something worth while it should designate for each industry whose products would be required in the event of war a small committee composed of some of the ablest men engaged in the industry, such committee to meet from time to time with officers of the supply department of the services assigned separately and specially to each committee, to study with thoroughness the government needs in the several lines of supplies and materials, and to report what arrangements should be made in advance to assure the government not

merely of a prompt and adequate service, but of all possible economy in cost.

By way of illustration Colonel Wood suggested that the committee for the wool manufacture might consist of an important departmental (civil) official as chairman, one officer from the supply department of each service (that is, the army, the navy, and the marine corps), three selected men from the wool manufacturing industry, and a secretary or clerk. Such a committee would be competent to assemble the data necessary for a thorough understanding of the subject, from the point of view both of requirements and of capacity to provide.

According to such an outlined plan it should be found possible to formulate the procedure whereby, under the guidance of such a committee, arrangements could be made in time of peace to allot certain designated units of supply and production respectively to the use of the army, the navy, and the marine corps; to enable the government to obtain annual option contracts renewable from year to year, whereby the government could call to its use whatever portion of suitable plants might be required, and to make similar annual contracts, renewable year by year, with mills and wool dealers, whereby the government could take a definite portion of such stocks as they might have on hand at a uniform advance in price (say, 10 per cent), over either the ascertained cost thereof or the open market value on the date received. Under this plan it would also be possible to prepare for the assembling and preparation of raw material in the necessary blends for each respective kind of goods.

If some such plan were adopted, Colonel Wood was of the opinion that the government could procure the largest possible output in the shortest possible time, with the advantage of uniformity in quality and appearance and of the utmost economy in expense. Every establishment having the necessary equipment could be permitted to enter into these optional contracts — each establishment determining for itself at the time the contract was made the maximum portion of its plant which could be set apart for national

service. The government at the time of need could determine how much of this maximum it would utilize. Prices being uniform, opportunities for complaints and dissatisfaction on the part of the trade would be at a minimum, and very much to the advantage of the government the most efficient plants would naturally be the most eager to enter into these government undertakings, because they could best be able to keep their conversion cost within the arbitrarily established figures. Colonel Wood pointed to the inefficient and wasteful methods followed by Great Britain, France, Russia, and Italy in their purchases during the present war as an illustration of what should and could be avoided by the United States government.

In the Army Appropriation bill of 1916 a new and important organization, the Council of National Defense, was established, consisting of six members of the President's Cabinet — the Secretary of War, the Secretary of the Navy, the Secretary of Agriculture, the Secretary of the Interior, the Secretary of Commerce, and the Secretary of Labor. This Council was directed by Congress to nominate to the President an Advisory Commission of seven persons, "each of whom shall have special knowledge of some industry, public utility, or the development of some natural resource, or be otherwise especially qualified." These seven members of the Advisory Commission thus chosen are Messrs. Daniel Willard, president of the Baltimore & Ohio Railroad; Howard E. Coffin, vice-president of the Hudson Motor Company; Julius Rosenwald, president of Sears, Roebuck & Company; Bernard M. Baruch; Samuel Gompers, president of the American Federation of Labor; Dr. Franklin Martin, and Dr. Hollis Godfrey, president of the Drexel Institute. As soon as possible the Council and Advisory Commission established offices in Washington and secured a staff of experts, with Mr. W. S. Gifford of the American Telephone & Telegraph Company in charge as director.

At the meeting of the Executive Committee of the National Association of Wool Manufacturers held at the

Hotel Belmont in New York City on February 7, 1917, preceding the annual meeting of the Association, a resolution was offered by Mr. Frederic S. Clark, president of the Talbot Mills and vice-president of the Association, and duly seconded by Mr. C. Bahnsen of C. Bahnsen & Company, vice-president of the Gera Mills, to the effect that:

Resolved, by the National Association of Wool Manufacturers, That, holding yet to the hope that actual war may honorably be averted, we pledge to the government, in case of need, the whole-hearted coöperation of our industry—all else to be subordinate to the interest of the United States.

This resolution was subsequently offered and unanimously reaffirmed at the annual meeting of the Association.

On the afternoon of the same day, at a special meeting of the Woolen Goods Exchange—founded July 1, 1916, under the auspices of the National Association—the subject of immediate coöperation with the government was fully considered by those present, and it was voted unanimously that Colonel John P. Wood, the President of the National Association of Wool Manufacturers, be requested, acting jointly with Mr. Herbert E. Peabody, president of the American Association of Woolen and Worsted Manufacturers, to appoint a committee, of which Colonel Wood should be chairman, to arrange as fully as possible for coöperative action by the wool manufacturers of the country in furnishing needed military fabrics. This committee, as nominated, is as follows: Colonel John P. Wood, of William Wood & Company of Philadelphia, President of the National Association of Wool Manufacturers; Mr. Nathaniel Stevens, president of M. T. Stevens & Sons Company, North Andover, Mass., and president of the Woolen Goods Exchange; Mr. Robert T. Francis of New York, selling agent of the Ponttoosuc Woolen Manufacturing Company of Pittsfield, Mass.; Mr. Moses L. Shuttleworth, agent of the Washington Mills of the American Woolen Company at Lawrence, Mass.; Mr.

Spaulding Bartlett, treasurer of S. Slater & Sons, Inc., of Webster, Mass.; Mr. George C. Hetzel, of the George C. Hetzel Company, Chester, Pa.; and Mr. Charles H. Wilson, of James & E. H. Wilson, Pittsfield, Mass.

As soon as this committee was selected, the fact was stated to Mr. W. S. Gifford, the director of the Advisory Commission of the Council of National Defense in Washington, and Mr. Gifford was assured that Colonel Wood and his colleagues would be glad to present themselves before the Council at the earliest possible day.

On Friday, March 30, the committee representing the wool manufacturers of the country was called to Washington to meet in preliminary conference with Mr. Julius Rosenwald of the Advisory Commission and with Mr. Charles Eisenman of Cleveland, who had been appointed to the Committee on Supplies of the Commission. The general understanding of what was expected of the committee was then secured from Mr. Rosenwald and Mr. Eisenman. A statement of the wool consumption of the country was presented. Other data immediately available were laid before Mr. Eisenman and further information required by the Council was arranged for.

On April 2 Mr. Eisenman addressed the following letter to the members of the committee:

I am pleased to inform you that you have been selected to serve on the committee as above, and I sincerely hope that your participation in the work will prove of great help to your committee, to your industry, and to your country.

The second conference with the committee of woollen manufacturers was arranged for, to be held in Washington at 10 A.M., on Tuesday, April 10, when the committee on raw wool as selected by Mr. Bernard M. Baruch of the Council of National Defense was expected to meet at the Capital. At this meeting a carefully prepared list was presented by the committee of woollen manufacturers of woollen mills in the United States manifestly qualified to manufacture cloth

or blankets required by the government, with the machinery capacity of each mill, and its address and the address of the selling agent. At this same meeting also various modifications in the government specifications for shirting flannels, uniform cloths, overcoatings, and blankets were earnestly recommended by the manufacturers in the interest of conserving the deficient wool supply of the United States and lessening the cost of these fabrics to the government. These recommendations were taken under consideration by the Committee on Supplies of the Advisory Commission of the Council of National Defense, and they were also explained to officials of the Quartermaster's Department. There were informal conferences on these days with members of the Raw Wool Committee and members of the advisory committees of the Boston and Philadelphia wool trades.

Very much appreciated as a token of good-will and frank coöperation by the authorities in Washington was the action of the Boston Wool Trade Association in adopting these significant resolutions at a meeting Tuesday, April 3:

Whereas: The extraordinary emergency now confronting this country requires each and every one of us to do his part, not only in loyally and patriotically supporting the President and the National Government, but also to render such assistance as is possible in other ways, and

Whereas: The clothing of an enlarged army and navy will require large quantities of wool, we recognize the necessity of placing all available stocks of wool at the disposal of the government for its needs. Therefore, be it

Resolved: 1st. That the members of the wool trade of Boston will neither buy nor sell any wool now in this country or in transit thereto until further notice from the committee appointed by this meeting.

2d. That each will furnish a true inventory of all wool, wool tops and noils owned or controlled on April 3d, to said committee.

3d. That the entire stock of wool, wool tops and noils shall be offered to the United States Government at values current on April 2d.

4th. That a committee of five consisting of

Jacob F. Brown,
William E. Jones,
Albert W. Elliott,
Wm. R. Cordingley,
John Wilcock,

be chosen to handle all matters in connection with these resolutions and to coöperate with the proper authorities appointed to deal with the raw wool supply.

Similar action was promptly taken, after the action of the Boston wool trade, by the Philadelphia Wool Trade Association and by the wool trade in New York, Chicago, and St. Louis.

Because no definite appropriation had been made and no specific authority had thus far been given, Mr. Bernard M. Baruch, the chairman of the Committee on Raw Materials of the Advisory Commission of the Council of National Defense, was compelled, on April 11, to notify Mr. Jacob F. Brown of this Committee on Raw Materials and also of the Boston wool trade committee that:

In view of the facts as related to us, I think it would be unwise and unfair to longer defer a decision on the magnificent offer of the wool dealers of Boston, Philadelphia, New York, Chicago, and St. Louis. It does not seem possible at this time to make a proper use of this tender. I wish you would convey to these associations my appreciation of their surprisingly generous offer. It is another evidence of not only the desire, but the great willingness of the business men to be helpful to the government in a time of a crisis.

The promised wool inventory of the Boston wool trade was very carefully prepared and was completed on April 13. This inventory in full was as follows:

BOSTON WOOL TRADE WOOL INVENTORY, AS OF APRIL 3, 1917.

Boston, April 13, 1917.

Following are the detailed figures of the wool inventory taken by the Boston wool trade as of April 3, and prepared for the use of the committee of the trade which conferred with the Raw Materials Advisory Committee of the National Council of Defense. As the latter declined the proffer of wool made to the Government by the trade, the figures were not used, but are made public pursuant to a unanimous vote of the trade at a mass meeting held in the Rice Building this morning to hear the report of the committee just returned from Washington.

DOMESTIC WOOL.*

Grade.	Greasy Combing.	Estimated Yield.	Combing Pulled.	Estimated Yield.	Greasy Clothing.	Estimated Yield.	Clothing Pulled.	Estimated Yield.	Scoured or Carbouized.	Total Estimated Yield.
Fine.....	2,252,505	887,762	90,091	54,055	846,011	308,412	59,285	36,198	789,062	2,075,489
1/2 Blood.....	922,202	383,380	68,282	47,004	365,002	139,645	185,025	121,416	409,694	1,101,139
3/8 Blood.....	1,963,860	918,384	199,846	158,818	585,300	262,693	476,260	329,430	1,313,349	2,982,674
1/4 Blood.....	479,203	255,010	112,642	88,946	277,218	134,906	189,599	142,372	978,180	1,599,414
Low 1/4 Blood...	356,913	194,799	7,000	6,000	1,000	840	20,552	16,756	759,076	977,471
Low.....	644,785	339,486	0	0	15,005	7,553	35,100	21,184	143,488	511,711
Total.....	6,619,468	2,978,821	477,861	354,823	2,089,536	854,049	965,821	667,356	4,392,849	9,247,898

* Domestic — Reported too late to be included in above inventory.

Greasy Fine and 1/2 blood	230,000 lbs.
Greasy 3/8 Blood	200,000 lbs.
Greasy 1/4 Blood	200,000 lbs.
Greasy Low	110,000 lbs.

740,000 lbs. — no shrinkage given.

FOREIGN WOOL "SPOT."

Grade.	Greasy Combing.	Estimated Yield.	Combing Pulled.	Estimated Yield.	Greasy Clothing.	Estimated Yield.	Clothing Pulled.	Estimated Yield.	Scoured or Carbonized.	Total Estimated Yield.
Fine.....	2,455,586	1,036,513	4,000	2,720	2,784,507	1,082,142	49,000	29,400	1,462,770	3,613,545
1/2 Blood.....	1,494,878	832,126	11,626	8,195	273,942	123,692	46,000	32,352	150,392	1,146,757
3/8 Blood.....	5,429,766	3,375,040	25,792	20,602	1,889,393	1,121,601	58,150	40,554	1,457,062	6,014,859
1/4 Blood.....	4,767,986	3,049,492	287,981	234,748	2,040,725	1,193,112	348,101	222,151	1,793,008	6,432,511
Low 1/4 Blood...	10,692,234	6,902,928	424,217	339,238	837,000	524,340	233,900	182,038	1,146,443	9,094,987
Lincoln.....	6,483,421	4,518,372	21,000	17,430	27,000	19,290	142,000	113,600	65,299	4,783,991
Carpet.....	414,774	234,294	13,000	11,440	134,649	84,049	71,700	55,304	41,802	426,889
Total	31,708,645	19,948,765	787,616	634,373	7,987,216	4,088,226	948,851	675,399	6,116,776	31,463,539

FOREIGN WOOL "TO ARRIVE."

Grade.	Greasy Combing.	Estimated Yield.	Combing Pulled.	Estimated Yield.	Greasy Clothing.	Estimated Yield.	Clothing Pulled.	Estimated Yield.	Scoured or Carbonized.	Total Estimated Yield.
Fine.....	2,426,570	970,878	0	0	1,859,792	741,864	0	0	1,033,700	2,746,442
1/2 Blood.....	2,402,000	1,237,930	0	0	360,000	178,600	20,000	17,000	50,000	1,483,530
3/8 Blood.....	3,996,000	2,320,710	0	0	2,875,000	1,641,870	150,000	91,000	225,000	4,278,580
1/4 Blood.....	3,529,000	2,200,060	11,100	9,324	922,700	500,537	9,000	7,920	90,000	2,807,841
Low 1/4 Blood...	1,296,500	844,270	0	0	1,035,000	558,400	10,000	9,000	35,000	1,446,670
Lincoln.....	917,300	546,710	0	0	0	0	160,000	128,000	70,000	744,710
Carpet.....	789,500	447,560	0	0	55,000	47,250	0	0	381,040	875,850
Total	15,356,870	8,568,118	11,100	9,324	7,107,492	3,668,521	349,000	252,920	1,884,740	14,383,623

In addition to the wool listed above, there has been reported 4,150,000 lbs. Greasy on which the grades were not definitely designated. Not stated whether Combing or Clothing.

Both the wool manufacturers' committee and the wool trade committees held themselves in readiness to respond to any other call for information or counsel from Washington. At the request of the Washington officials the committee of manufacturers took it upon themselves to do all that could be done to hasten the completion and delivery of government orders, and to interest in future government work the largest possible number of manufacturing establishments.

The Executive Committee of the Woolen Goods Exchange in New York took prompt action to establish there an office in which official samples of government cloth, specifications, and other useful information should be made available at any time to manufacturers who had not hitherto had experience in government work, but were desirous of undertaking it.

From the first development of the crisis in international affairs, many of the larger and smaller wool manufacturing establishments of the country had deliberately, of their own accord, deferred profitable civilian contracts in order to make way for government contracts or to put themselves in a position to handle such orders later on. The uncertain factor in the situation had been the cost of materials and supplies. An advancing wool market would compel some increases in the prices of government fabrics. It was with a view to preventing an abnormal increase that the Boston wool trade acted and was followed so quickly and loyally by the wool merchants of other important markets of the country. The motives of this action were understood and approved in official circles in Washington.

WINTHROP L. MARVIN.

COLLECTION OF STANDARD WOOLS
The First National Bank of Boston



STANDARDIZING OF WOOLS.

By FRANK WALDO, PH.D.

I. SHEEP AND WOOL.

THE basis of the wool industry is the sheep industry, since the various breeds of sheep and the cross breeds grow the different types of wool.

The origin of modern sheep is a matter for scientific discussion; but the great sheep industry of modern times had as its foundation the developed sheep of western Europe—Spain at the South and Great Britain at the North; and to these must be added the so-called native sheep of various semi-developed countries.

It has been argued that the sheep of western Europe were of Asiatic origin; but that an infusion of blood from African sheep produced the finer woolled breeds of Spain, as contrasted with the long coarse-wooled breeds of Great Britain.

The various geographic conditions, together with the artificial influences of man, have so acted upon native sheep as to produce a number of varieties of domestic sheep—so-called breeds, with distinctive characteristics both of the animals themselves and of their wools. The marked influence of soil, climate, herbage, and altitude have been powerfully reinforced by the artificial management and forced breeding instituted by man.

The great variety of sheep has made necessary the classification of breeds of sheep and their crosses; and it has been half seriously remarked that there are probably as many classifications of the breeds of sheep as there are breeds.

The sheep is distinctively a high altitude animal, but domestication has modified its habits so that certain kinds have been developed which do well on lowlands; there is, therefore, a classification of sheep by the altitudes at which they thrive well. Such a classification of existing breeds of domestic sheep by altitudes has an important bearing on the modern sheep industry. Among the various breeds the

Romney Marsh, Lincoln, Leicester, and Cotswold flourish at low altitudes. The Oxford, Shropshire, Hampshire, Suffolk, Southdown, Dorset, and Merino sheep do best in uplands of moderate altitude. The Cheviot, Welch, Blackfaced, and Shetland sheep thrive at higher, and even mountain altitudes.

Another classification of breeds of sheep is by the color of the face. Another classification is by the criterion of horns or no horns; due account being taken of the fact that in some breeds the male has horns and the female is hornless. Thus the Dorset, Highland, Exmoor, and Lonk are horned; and for the Merinos and Welch sheep the ewes are hornless. The Romney Marsh, Lincoln, Cotswold, Leicester, Oxford, Shropshire, Suffolk, Hampshire, Southdown, and Cheviot sheep are polled.

Sheep are also classified according to the length of the wool fiber. The Wensleydale, Leicester, Lincoln, and Highland sheep are long woolled. The Merinos, Shropshire, Hampshire, Oxford, Cheviot, Dorset, and Suffolk are short woolled. The classification of sheep according to the fineness of the wool is the most delicate and satisfactory.

The Merinos are fine woolled sheep.

The Southdown, Shropshire, Hampshire, Oxford, Cheviot, Suffolk, and Dorset are medium woolled sheep.

The Romney Marsh, Wensleydale, Leicester, Lincoln, and Highland sheep are coarse woolled.

It is on the fineness of wool more than on any other one quality that the spinning standards of wool are based.

Sheep are broadly grouped on a wool basis as follows:

Merino Breeds or fine wool sheep. These produce poor mutton.

British Breeds or medium and coarse wool sheep. These produce good mutton.

Native Sheep of many lands, usually coarse wool sheep.

Cross breeding of these types of sheep has been carried on very extensively; the sheep being called Cross-breds. The term "blood" is applied to these sheep to show the merino blood in them; the fraction ($\frac{1}{2}$, $\frac{1}{4}$, etc.) indicating the proportion of merino blood. In Australasia the term "bred"

is applied to show the English sheep blood in them; the fraction ($\frac{1}{2}$, $\frac{1}{4}$, etc.) indicating the proportion of "English" blood. In the cross breeding of sheep a pure-bred ram is usually employed.

The merino sheep produce fine wool but poor mutton, so that, owing to the lack of profit in maintaining sheep for the wool alone, the merino breed has been crossed with some of the long wool British breeds to produce "cross-breds" which shall produce both valuable wool and good mutton. The cross-breds produced by crossing the merinos with Lincoln, Leicester, or Romney Marsh breeds have become most popular. A most important cross-bred derived from successive crosses of merino and Lincoln breeds is the Corriedale, which has practically developed into a distinctive breed.

In recent years the merino sheep have undergone a change through breeding throughout the world. There has been a commercial tendency away from the type with numerous folds in the body skin towards the smooth skin type in which the neck folds remain, but the body is fairly smooth. This has given rise to a nomenclature which has been adopted by the United States Department of Agriculture and is growing in use among sheep growers, in which the merinos are divided into three classes, A, B, and C, according to the degree of development of the skin folds.

Class A: in which the folds extend on the head and body. The wool is oily, having a heavy yolk. Such sheep have been favorites in America and Australia, and are especially useful for breeding purposes. The Vermont merino is typical of this class.

Class B: in which the folds are confined chiefly to the neck and chest, with slight folds on the thighs. The wool is less oily than in Class A, but is lighter in weight and longer. Some Spanish and American sheep are of this type, which is a practical one for fine wool production on a commercial scale. This class may be produced by crossing Class A and Class C.

Class C: in which the folds are practically absent except the greater folds of the neck. The wool is still less oily and longer than for A and B types, and the carcass is better

suited for mutton. The Rambouillets, American delaines, and some Cape merinos belong to this class, which is growing in favor. There is, however, a strong tendency to put the Rambouillets in a class by themselves.

II. WOOL STANDARDS.

The accurate and scientific standardization of wools requires a word of explanation even to those who have more or less familiarity with sheep and wools. That there is need of definite wool standards is shown by the fact that there are so many variations in wools; and it is indeed remarkable that notwithstanding the variety of opinions which are to be found concerning wool types, yet through it all there runs a common agreement in the wool business world that has been found workable in all stages of the wool industry, although with the enlargement of the scope of the wool trade and the intensification of national and international competition the need for a more definite standardizing of wools for trade purposes has become a necessity.

There are three separate and distinct classes chiefly concerned with the classification and standardization of wools: 1, the wool growers; 2, the wool merchants; 3, the wool manufacturers. A satisfactory standard classification of wools must embrace the practices of all three classes, and so far as possible unify them; but on the other hand this establishment of actual standards must be totally independent of the commercial interests attending the raising, the sale, and the use of wools.

It would seem a very easy matter to go out into the local markets and obtain specimens of wool for the purpose of showing the various grades that appear in commerce. Such specimens, if arranged in rows according to their characteristics, would give a rough classification, such as would serve for market uses. But such rough and ready methods will not provide independent standards for the comparison of specimens found in the market, and to be used for reference in cases of difference of opinion where near grades of wool

are involved, but in which variations from a standard type are noticeable.

When the various great governments of the world have felt the need of establishing fixed standards for the commodities of commerce, they have gone about the matter in a scientific way. Each substance is studied in its various conditions and uses, beginning as far back as possible among the original sources of supply, so that specimens are obtained from the original producers who furnish satisfactory proof that they are exactly what they purport to be, each specimen being duly labeled so that it cannot become mixed up or confused with any other specimens of like characteristics or similar appearance. Such a careful collection of commodities or products from original sources and their assembling at one center from various parts of the world is a laborious, exacting, and expensive process. Such is the method that must be employed for obtaining standard types of wool.

WOOL-GROWERS' CLASSIFICATION OF WOOLS.

The wool-growers' classification of wools is a natural one, based on the breed or blood of the sheep. The owners of large flocks of sheep, and especially those making efforts to improve their flocks, are usually well informed as regards the types of sheep in their flocks. This is especially true among the large sheep ranches of Australia, New Zealand, and South America, where wools are carefully graded. In the United States among the very small flock wool-growers there is less definite knowledge regarding the sheep of the flocks. But conditions are improving through the efforts of governments and of various associations and business concerns interested in sheep and wool to extend the knowledge of breeds of sheep and types of wool.

MANUFACTURERS' CLASSIFICATION OF WOOLS.

The manufacturers' classification of wools is an artificial and arbitrary one, growing out of the adaptability of wool for the manufacturing processes, and is roughly based on its spinning quality, although other conditions likewise enter.

On the woolen or carded wool side of the manufacturing, yarns are graded on the "run" system in which 1,600 yards, equalling one pound, make a one-run yarn; a two-run yarn would have 3,200 yards to a pound, etc. In the "cut" system, 300 yards equal a number one "cut," etc. On the worsted side a count is 560 yards of yarn; and the spinning quality of wool is indicated by the number of "counts" that can be spun from one pound of the wool, and the yarns are known as No. 1, No. 2, etc., though a No. 12 is probably as low a number as is usually spun on a spinning frame.

In the wool market there is a transition from the growers' wool nomenclature to that of the manufacturers' so that the wool merchant must be conversant with both the "blood" or "breed" and the spinning classification of wools.

Numerous attempts have been made to combine the classifications of wool by race and blood and by counts so that the wool grower and the manufacturer should come together in a unified classification of wools. Various books and reports have given tables combining these classifications, in which the classification of one could be expressed in terms of the other. These have been based on the conditions in various regions of the world, and a general agreement has been found difficult to bring about. That the United States government wool inspectors have to a certain extent employed these two classifications forms a basis for their combination on an independent basis, which should be acceptable, although it has not the stamp of government requirements, as in the case of the race and blood classifications which alone form the basis of the government wool standards.

Doubt has been expressed in some quarters as to the fact of there being any such thing as standard wools, and when one surveys the wool market and views the almost endless varieties of wool found there, the impression of the mind unaccustomed to referring things to standards for comparison may well be that the wool conditions are too complex for standardization. It might be considered more satisfying, therefore, to wool men to use the phrase, "standard types of wool" in place of the term, "standard wools," but the latter term is undoubtedly warranted from a scientific point of view.

Much of the existing confusion and uncertainty of mind as regards wool standards, or wool types, arise from the consideration of the wools almost completely apart from the sheep that grow them. As a matter of fact, no scientific standardization of wools or systematic classification seems possible without taking into account the various breeds of sheep and their crosses. Such skilled high authorities on wools as Messrs. Bond and Dimond came to this conclusion in the establishment of collections of comparison wools for the United States Customs Service many years ago, and the increasing complexity of wool types in recent years has only made the consideration of the breeds of sheep a greater necessity in standardizing wools. The more careful present-day study of systematic records of sheep — both pure bred and the various crosses — have shown that the wools run remarkably true to breeding. The best illustration of this that has come to our notice is a collection of nearly 150 Argentine wools prepared by the Argentine government, and showing the various grades of wool from the pure-bred merino down through successive crossings with the Lincoln to (and including) the fifth cross. Few wool experts could view this series of wools and note the gradual change in the character of the wool in each successive cross (and for varieties of climate and pasturage) without recognizing the accuracy of the breeds of sheep and cross-breeds as a basis for systematic wool classification. This is convincingly illustrated in the series of Argentine wools embraced in the Boston First National Bank's Collection of Standard Wools;¹ the wool of this series having been selected from the large Argentine government collection of wools mentioned, at such appropriate gradation as to show the wools of the successive crossings of the sheep breeds, and they cover the whole range to the sixth cross. In fact, so true do the wools follow the breeding and cross breeding of the sheep that the adoption of wool types based on the true naming of the breeds and cross breeds of the sheep reduces at once to a system the apparent confusion of specimens of wool when considered independently

¹ See pages 183, 184.

of the sheep producing them. Nor does the fact that sheep are best classified according to their wools affect the grading of wools upon the basis of sheep breeds. It is true that wools found in the markets are mostly separated from the names of the sheep producing them, and this is the greater reason for the establishment of collections of standard wools for the identification of miscellaneous wools.

The scientific idea of a standard is something that can be reproduced under certain specific conditions and that has characteristics that are recognizable as referable to or dependable upon those conditions. A specimen of wool, for example, which comes from a sheep of specified breeding or "blood" will in the main possess certain spinning qualities, which may be expressed numerically on the manufacturers' scale of wools, so that when the "blood" of sheep is known the spinning qualities can be stated. But if a specimen of wool of certain spinning qualities is selected, it might be a very difficult matter to determine from the wool alone the "blood" of the sheep which grew the wool, especially in the case of cross-bred sheep from various lands. So that the breed of sheep is the proper scientific basis for standardizing wools, rather than the spinning qualities, because the breed determines the spinning qualities, and the spinning qualities do not easily identify the breed. A comparative study of two collections of standard wool types, the one series arranged on the basis of "blood" or breeds of sheep with the spinning qualities of each specimen annexed, and the other series arranged on the basis of spinning qualities with the possible qualifying wool breeds annexed, would demonstrate most conclusively that the standardization of wools must be based on the "blood" of the sheep.

The use of the microscope in the identification of wools looking to the establishment of wool standards early suggested itself to those interested in this problem, and much time and money have been devoted to individual measurements of wool fibers from the point of view of the microscopist. But in judging and classifying wools the appearance of the wool staple as a whole must be considered, and it takes only one glance at a tuft of wool through a hand glass

magnifying but a few diameters to show a wool man the futility of applying the microscope to the practical wool industry; for the magnification destroys the visuality of those characteristics which he regards as necessary for consideration in judging wools. Likewise it has been found that the refined mechanical tests of the tensile strength of a single wool fiber cannot replace the finger tests of the expert wool man on pluckings from the wool staples. So that the trained eye and fingers of the wool expert must still be relied on in judgments of wool qualities, with the aid of a scale showing inches and hundredths or millimeters; but the wool man would be greatly aided by having access to a collection of standard wools for comparative purposes. The present writer has in mind one wool merchant who has for his own business use such a collection, embracing nearly four hundred specimens of identified wools.

The popular or general idea of a "standard" is that it is something absolute and invariable, but this is not true for wool standards based on the "blood" of the sheep that grow the wools; for the standards of sheep breeds change and the wools undergo corresponding changes. So that standard wools belong to that category of standards, known as variable or changeable standards, that is, certain types of wools are standards for some particular time or period and do not necessarily hold for any other time, for example, some years before or after that date. It is for this reason that the various collections of standard types of wool made in years gone by have far more than a purely historic interest and should be preserved with the utmost care in their original conditions.

III. THE UNITED STATES CUSTOMS WOOL STANDARDS.

The wool standards set up by the United States government have been immediately connected with tariff legislation, and sweeping and important changes in that legislation have been accompanied by revisions of the wool standards.

The basis of the classification and standardization of wools

by the United States Customs Department was the tariff on wool and wool manufactures to be found in the Act of March 2, 1867. In the previous Acts of 1861 and 1864 no satisfactory plan had been arrived at, but in the Syracuse Convention of December, 1865, held in pursuance of the plans of the United States Revenue Commission, conclusions were reached according to which the Act of 1867 was framed. The general principle on which this act was based has served as a structural basis for the various tariff schedules, even up to that of the Act of August 5, 1909.

Wools were divided into three classes: Class 1, clothing, Class 2, combing, and Class 3, carpet.

The "breed" classification of wools adopted in the various tariff schedules, notably those of 1867, 1883, 1890, and 1907 were according to the race and blood of the sheep and their special characteristics of wool; although the adopted terms "clothing," "combing," and "carpet" wools mentioned specifically in the tariff acts of 1867 and 1883 as the three comprehensive distinctive classes ceased to be used as class designations in the tariff revision of 1890.

During recent years, owing to new methods and improved machinery, there has been a gradual overlapping and merging of the lines of the first two classes, and the former distinction between the clothing and combing wools is no longer so closely drawn.

The story of the establishment of wool standards for the United States Customs Service is most interesting, the present writer's attention having been directed to the successive steps by Mr. William J. Battison. Mr. George William Bond of Boston had drawn up the classification of wools for tariff purposes and when an Act of Congress was passed on March 2, 1867, providing for the establishment of standards of imported wools by the formation of a group of properly authenticated specimens of wools from sheep of known breeding, Mr. Bond, formerly known as "the nestor of the Boston wool trade," was selected as the proper person to collect and classify these specimens of standard wools. Mr. Bond remarks: "Few subjects have received so little scien-

tific attention as sheep and wool. This has rendered it very difficult to fix with accuracy, in many countries, the races of sheep from which the wools of those countries have been obtained."

In his report to the Secretary of the Treasury on a cabinet of wool samples supplementary to that prepared in 1867, Mr. Bond outlined the principles by which he was governed in the preparation of the two cabinets, namely, a classification by race or blood, the lines of quality running subtly into one another, and clothing, combing, and carpet wools overrunning, so to speak, and being found in the same flocks or even in the same fleeces.

The original United States Government Classification was as follows :

First Class — Clothing Wools.

"That is to say, Merino, Mestiza, Metz or Metis wools, or other wools of Merino blood, immediate or remote; down clothing wool, and wools of like character with any of the preceding, including such as have been heretofore usually imported into the United States from Buenos Ayres, New Zealand, Australia, Cape of Good Hope, Russia, Great Britain, Canada, and elsewhere, and also all wools not hereinafter described or designated in Classes 2 and 3." This class, then, includes Merino wool, pure and mixed, and down clothing wools.

Second Class — Combing Wools.

"That is to say, Leicester, Cotswold, Lincolnshire, down-combing wools, Canada long wools,¹ or other like combing wools of English blood, and usually known by terms herein used; and also all hair of the Alpaca, goat and other like animals." This class, including combing wools of English blood and Canadian long wools, is quite definite in its requirements.

Third Class — Carpet Wools.

"Such as Donskoi, Native South American, Cordova, Valparaiso, Native Smyrna, and including all such wools of like

¹ The words "Canada long wools," accidentally omitted, were added March 22, 1867.

character as have been heretofore usually imported into the United States from Turkey, Greece, Egypt, Syria, and elsewhere." This class is much more loosely designated than the other two and includes all wools that are not embraced in the other two classes.

THE U.S. GOVERNMENT CUSTOMS HOUSE WOOL STANDARDS OF 1867 AND 1872.

The following is a list of the samples as prepared by Mr. Bond for the United States Government, and classified according to the law of Congress, of March 2, 1867: "The principle of classification is strictly by blood. Class 1, consists of wools of merino blood, immediate or remote, and down clothing wools. Class 2, Combing wools of English blood, and long Canada wools. Class 3, Carpet and similar wools, including all wools of different breeds from those in the two former classes, such as have been heretofore imported for carpet manufacture. No samples were to be obtained in the country of African, Spanish, French, German, and other continental wools; consequently they have not been classified."

The preparation of the samples (of 1867) "being completed in May, 1868, the Secretary of the Treasury appointed a commission for their examination. The Commission, consisting of Mr. Edwards, Chief of the Customs division; Mr. Baush and Mr. Rice, respectively appraisers of New York and Boston; Dr. Randall, Mr. Hammond of Vermont, Dr. Townsend of Ohio, and Mr. Loomis of Connecticut representing the National Wool-growers' Association, and Mr. Edmands, Mr. Hayes, and Mr. Cameron, representing the National Association of Wool Manufacturers, assembled in Boston, and carefully examined the standard samples, which received the unqualified approval of the examiners, both as to the principles of classification and conformity of the samples to the intent of the law." This first list of United States Customs House Standard Wool samples of 1867 is as follows:

CLASS 1.

Clothing Wools.

1.	Buenos Ayres.....	Merino
2.	" "	"
3.	" "	"
4.	" "	Mestiza
5.	" "	"
6.	" "	Mestiza
7.	Brazil.....	Rio Grande
8.	Chilian.....	Merino
9.	"	Mestiza
10.	Cape of Good Hope	Fine
11.	" " " "	"
12.	" " " "	Common
13.	New Zealand	Fine
14.	" "	"
15.	Australian	Adelaide
16.	Sandwich Island	
17.	" "	"
24.	Mexico.....	Fine
27.	Canada.....	Pulled
28.	England.....	Diamond Wether

CLASS 2.

Combing Wools.

29.	England.....	Leicester
30.	"	Dorset Down
31.	"	Sussex Down
32.	"	Kent Down
34.	"	Diamond Teg
35.	"	Shafly Teg
36.	"	Super Teg
37.	"	Common Matching
39.	" Wether, Long Drawing	
40.	" Super Wether Matching	
41.	"	Hoggett Fleece
42.	"	Half-bred Fleece
43.	"	Half-bred Wether
44.	"	Combing Skin

47.	Canada.....	Pulled
48.	"	Fleece
49.	Mohair	

CLASS 3.

Carpet and Similar Wools.

52.	Turkey or Syria	Mossoul
53.	Iceland	
54.	Buenos Ayres	San Louis
55.	Turkey.....	Smyrna
57.	Buenos Ayres	Cordova
58.	" "	Santiago
59.	" "	Common Entre Rios
60.	" "	Corrientes
61.	Chili	Valparaiso
62.	Brazil.....	Rio Grande
63.	Russia	Donskoi Washed
64.	Turkey	
65.	"	
66.	"	
67.	"	
68.	"	Fine Smyrna
69.	"	Salonica
70.	Russia.....	Donskoi, Unwashed
71.	Turkey or Syrian	
72.	"	
73.	"	
74.	Dutch East Indies.....	Curacao
75.	Mexico.....	Common
76.	Russia.....	Calmuc
77.	Turkey	Grah
78.	East India	
79.	" "	
80.	Persia	
81.	East India	
82.	" "	
83.	" "	
84.	" "	

"In 1872 Mr. Bond wrote a second paper on Wool Classification equally valuable and important to accompany a new set of samples he had prepared at the request of the Secretary of the Treasury. These samples were destroyed in the great fire of 1872. He had visited Europe in the collection of these samples and made the acquaintance of many of the men famous abroad for their knowledge of fiber."

THE U.S. GOVERNMENT'S STANDARD TYPES OF FOREIGN
WOOLS OF 1884.

Through the courtesy of the National Association of Wool Manufacturers, which has in its custody the case of standard wools prepared by Mr. George William Bond for the United

States Customs Service in Boston in 1884, this set of standard wool samples, exhibited in connection with the Bank's collection, is of more than historical importance since it is the standard with which all Foreign Wools imported were compared from that date to about 1892, when the new series of United States wool standards was adopted, which, with some few changes, is the one now established in the Boston and other custom houses.

The list of about 70 Foreign Wools named in the standard of 1867 was increased to 111 in 1884.

CLASS I.

1. South Africa.....Cape Fleece
2. " "Natal
3. " " .. Cape, unwashed
4. " "Cape skin
5. Algiers
6. Constantine
7. Oran
8. MoroccoLarrache
9. " Beldia
10. " Urdigria
11. Spain..... Talavera
12. " Navarre
- 13.
14. Australia, Port Philip, lambs
15. " " " cross-bred,
washed
16. " " " washed
17. "Noils
18. " . Port Philip, washed
19. " .. " " fleece
20. " .. " " scoured
21. New ZealandMatchings
22. " "
23. " "Matchings
24. " " Cross-bred
25. Argentine Republic, Entre Rios
Matchings
26. " " Buenos Ayres
Skin
27. Uruguay
28. Argentine Republic....Lincoln
29. "Mestiza
30. GermanySaxony
31. TurkeyGalatz, Zigay
32. "Carna, "
33. " Adrianople
34. Wales
35. Brazil..... Mestiza
36. Italy..... Pulled
37. "
- 38.

CLASS II.

39. England..... Wiltshire Downs
40. " Dorset Horns
41. " Stafford
42. " Shropshire
43. " Lincoln
44. " Yorkshire
45. " Sussex Downs
46. " Leicester
47. " Medium Downs
48. " Best Downs
49. Canada..... Pulled Combing
50. " Fleece
51. Ireland
52. Scotland.....Cheviot
53. China..... Cashmere
54. East India..... "
55. Turkey Mobair
56. " Mohair noils
57. Peru..... Vicuna
58. " Alpaca

CLASS III.

61. Italy.....Coarse pulled
62. Persia..... Bagdad
63. " Karadi
64. " Aleppo
65. " Carach
66. " Mossoul
67. " Bagdad
68. " Bokhara
69. " Khorasan
70. " Noils
71. East India Marwar
72. " " Vicaneer
73. " " Pathan
74. " " Kandahar
75. " " Joria
76. " " Native
77. " Georgia, B.O.

78.	Georgia, B.S. (1st and clip)	96.	Tarakama
79.	“ B. “ “	97.	England .....Herdwick
80.	“ G.C. “ “	98.	Scotland, Unwashed, Highland
81.	....Georgia, lambs	99.	“ ...Washed, “
82.	.....Nouka	100.	“Laid, “
83.	Russia .....Donskoi	101.	“Haslock
84.	“Donskoi, noils	102.	“ ...Haslock, pulled in
85.	“Kalmuc		England
86.	Turkey.....Limed, Smyrna	103.	Argentine Republic..Cordova
87.	“Fine, “	104.	“ “ Entre Rios,
88.	“Angora		Criolla
89.	“Erzeroum	105.	Brazil.... Rio Grande, “
90.	“Salonica	106.	Chili .....Valparaiso
91.	“Kassapbatchi	107.	China
92.	Greece	108.	“
93.	Austria.....Zackel	109.	Spain... ..Churro or Coarse
94.	Africa.....Bengazi	110.	Egypt
95.	Portugal.....Oporto	111.	Iceland

THE U. S. GOVERNMENT FOREIGN WOOL STANDARDS OF 1892 AND 1900.

In accordance with the Act of 1890, paragraph 380, Secretary Foster appointed in April, 1891, a committee consisting of Edward A. Greene of Philadelphia, Nicholas Mauger of Mauger & Avery of New York, and John T. Rich of Elba, Michigan, and later J. L. Houston of Hartford, to consider the making of additions to the standard wool samples then in use, in order to carry out the provisions of the new law, which provided that: "Whenever wools of Class Three shall have been improved by the admixture of Merino or English blood from their present character, as represented by the standard samples now or hereafter to be deposited at the principal Custom Houses of the United States; such improved wools shall be classed for duty, either as Class One or Class Two as the case may be." Mr. William H. Dimond, examiner of wools at the port of Boston, was designated by the Treasury Department to make the necessary collection of wool samples and for this purpose he journeyed around the world.

In February, 1898, he was instructed to make additions to the collection of government standard samples pursuant to the provisions of paragraphs 352 and 353 of the Act of July 24, 1897. This collection of United States standard wool samples consists of 127 jars of Class 1 wools; 44 jars of Class 2, and 110 jars of Class 3 (besides 49 jars miscellaneous,

including noils, waste, shoddy, etc.; and 29 jars of goat and cattle hair), making a total of 359 jars of standard specimens of foreign wools. It is this completed collection, as published under date of December 20, 1900, by the Treasury Department, which forms the basis of the collection formed by the First National Bank. Mr. James McKissock, the wool examiner at the Boston Custom House, and Mr. William J. Battison, statistician of the National Association of Wool Manufacturers, have given freely of their experience and advice in connection with the preparation of the Bank's collection of standard wools.

IV. THE FIRST NATIONAL BANK OF BOSTON:

COLLECTION OF STANDARD WOOLS, 1917.

Among the domestic and foreign commercial interests of the United States, wool has held a most prominent place; and Boston being the acknowledged center of the wool trade of this country, and under present war conditions, of the world, it has been deemed proper by the First National Bank of Boston, by reason of its position among American financial institutions, that it should take cognizance of the prominence of the Boston wool market by bringing together a representative collection of standard wools of foreign and domestic types. This collection, together with photographic representations of some of the important standard types of breeds of sheep producing these wools, was prepared by the writer of this article.

The desirability of such a collection of standard types of wool is indicated by the fact that heretofore there has not existed in Boston (outside of the samples of foreign wools in the United States Custom House used for tariff purposes) a collection of properly identified wool types available for the comparison of individual specimens of commercial wools, the systematic study of wools for the purposes of employing new types of wool in manufactures, the selection and the introduction of sheep to obtain desirable types of wool, and the promotion of an interest in wools in general.

The object of the Bank's collection of standard wools is twofold; first, that it shall represent in a general way the wool types of the world; second, that it shall represent in somewhat greater detail the types of wool that come to Boston.

To fulfil these conditions completely would require a collection of upwards of one thousand specimens of wools, so that the practical limitations of the Bank's collection to about one-seventh of this number has been accomplished only through the most careful selection.

A small number of scattered collections of properly identified general or local wool samples have been brought together in museums, exhibitions, great expositions, large commercial establishments, and by associations and even governments; and it is believed that the collection of the First National Bank of Boston, drawing, as it does, upon half a dozen of the finest collections of wool types as yet assembled, will become of recognized importance.

Loan collections of twenty specimens of domestic United States wools from the Lowell Textile School and the series of United States Custom House standard wools of 1884, obtained through the courtesy of the National Association of Wool Manufacturers, were exhibited with the Bank's collection as a matter of interest to the wool trade.

THE BANK'S COLLECTION OF PHOTOGRAPHS OF STANDARD TYPES OF SHEEP.

Climate, environment, and care so greatly influence the growth of sheep, and of the wool as well, that the same breed develops varying characteristics in different lands and even in various sections of the same country; so that the selection of representative sheep of the different breeds is a matter requiring much time and careful judgment.

In the collection of photographs of types of sheep by the First National Bank of Boston, those selected by the Bureau of Animal Industry, United States Department of Agriculture, have been adopted in the main, thus avoiding an inde-

pendent exercise of judgment where individual opinions might differ widely. The Bank's collection of photographs being on a scale of ten by fourteen inches, the distinctive characteristics of the various breeds of sheep are clearly brought out.

THE MERINO-BLOOD, FINE SHORT-WOOLED SHEEP.

The Spanish merino with a wrinkled skin, which is the progenitor of the fine wool sheep, has served to distribute the merino breed throughout the world, and is exemplified by the Vermont, Australian, and Tasmanian merinos.

The merino sheep and cross-bred sheep containing merino blood, which produce Class 1 wool of the United States Customs classification, are exemplified in this collection by the following-named photographs of sheep :

1. Merino Ram*.....Australia	9. Merino Ewe, Class C
2. " " Tasmania	10. Rambouillet Ram
3. " " Australia	11. " Ewe
4. " " † Class A	12. Corriedale..... New Zealand
5. " Ewe, " "	13. " Ram..... Australia
6. " Ram, " B	14. Lincoln Rambouillet Ram
7. " Ewe, " "	15. Cotswold " "
8. " Ram, " C	

* Valued at \$8,400.

† For descriptions of Class A, Class B, and Class C, see page 167.

THE BRITISH MEDIUM AND COARSE WOOLED MUTTON SHEEP.

The wool of these sheep varies in character from the soft compact fine wool of the Hampshire Down breed to the harsh, long, coarse wool of the Romney Marsh breed. The British breeds which produce Class 2 wool of the United States Customs classification is represented in this collection by the following-named photographic reproductions of sheep :

16. Hampshire Ram	22. Dorset Ram
17. Suffolk Ram	23. Leicester
18. Southdown Ram	24. Border Leicester Ram
19. Shropshire Ram	25. Lincoln Ewe
20. Cheviot Ram	26. Romney Marsh Ram
21. Cotswold Ewe	

NATIVE SHEEP.

The so-called Native sheep which are scattered over the world, and which produce chiefly Class 3 wool of the United States Customs classification, are represented in this collection by the following-named photographs of sheep:

27. Black Face Highland Ram
28. Karakuie Ram

29. Tunis Ram
30. Persian Ram

THE BANK'S COLLECTION OF STANDARD WOOLS.

This collection of standard wools was obtained from the various collections of identified wool specimens at the Philadelphia Commercial Museums of Philadelphia, through the kind offices of Dr. William P. Wilson, the Director, and of Charles R. Toothaker, the Curator, who individually selected the specimens. The foundation of this collection is the existing group of United States Custom House Standard Wools, which was secured at a cost to the government of about \$20,000; and a list of which was published in the Bulletin of the National Association of Wool Manufacturers, January, 1901. It is regrettable that the list with the descriptive text accompanying it, some thirty-two pages in all, is too lengthy for reproduction herewith. Without the text a list of the samples would lose much of its interest and value. The fleeces remain in the custody of the Commercial Museum.

Where possible, the United States Standard wools are supplemented in the Bank's collection by more recent identified wools which represent some of the wools produced at the present time in those countries where recent radical changes have been made in the types of wool grown through changes in crossing breeds of sheep, — and particularly in New Zealand, Australia, and Argentina.

The New Zealand and South Australian wool specimens are from wools recently sent to the Commercial Museum by governmental departments of those countries for the use of the United States Bureau of Standards. Four of the New Zealand wools are from the recent World's Fair exhibits at San Francisco. The Argentina wool specimens were chosen

from a collection of about 150 wools selected by the Argentine Government to represent their wool growing industry at the Columbian World's Fair. The four specimens of Punta Arenas wools were exhibited at the Buffalo Fair.

The Bank's plan for a collection of wool standards included samples of the various commercial types of wools grown in the different sections of the United States; but a search failed to reveal any such extended collections of specimens as exist for foreign wools. The ten specimens of the United States wools now in the collection were from the wool exhibit at the Paris International Exposition.

Representative specimens from the separate fleeces are placed in glass jars for preservation, but so displayed that the various qualities of the wool may be observed; and staples drawn from each fleece are placed in correspondingly numbered boxes for closer examination.

A list of these wools follows. The classes refer to the class divisions numbered 1, 2, 3, established by the United States for customs purposes.

THE BANK'S COLLECTION OF STANDARD WOOLS.

CLASS I.

No. 1.	Rambouillet Pure Bred Ewe	Argentina
" 2.	Top Cross Negrete on other Merino Grades	"
" 3.	" " Rambouillet on other Merino Grades	"
" 4.	" " " " " "	"
" 5.	" " " " " " 1st	"
" 6.	" " " " " " 2d	"
" 7.	Fine Cross-bred Lincoln, 1st	"
" 8.	" " " 1st and 2d	"
" 9.	" " " 2d	"
" 10.	" (Middling) Cross-bred Lincoln, 2d and 3d	"
" 11.	Medium Cross-bred Lincoln, 2d and 3d	"
" 12.	Fine Cross-bred Lincoln, 3d	"
" 13.	Medium Cross-bred Lincoln, 3d	"
" 14.	Fine (Middling) Cross-bred Lincoln, 3d and 4th	"
" 15.	Medium Cross-bred Lincoln, 3d and 4th	"
" 16.	Coarse Cross Lincoln, 3d and 4th	"
" 17.	" Cross-bred Lincoln, 4th	"
" 18.	" " " 5th Tuyu	"
" 19.	" " " 5th Maipu	"
" 20.	Shropshire Cross-bred	Falkland Islands
" 21.	Punta Arenas Cross-bred (Est. 56's)	Chile, Punta Arenas
" 22.	" " " (Est. 48's)	" " "
" 23.	" " " (Est. 56's)	" " "
" 24.	" " " (Est. 50's)	" " "

No. 25.	Merino Mestizo Rambouillett.....	Uruguay
" 26.	" " "	"
" 27.	Fine Combing Merino	New Zealand
" 28.	Strong Combing Merino Ewe.....	"
" 29.	Lincoln Merino, Fine.....	"
" 30.	Corriedale Ram, Fine.....	"
" 31.	" Hoggett.....	"
" 32.	" Ewe Medium.....	"
" 33.	" Wether Medium	"
" 34.	Cross-bred Ewe.....	"
" 35.	Half-bred Ewe Hoggett Deep	"
" 36.	Cross-bred Hoggett.....	"
" 37.	Half-bred Hoggett	"
" 38.	Cross-bred Romney Marsh-Lincoln Ewe	"
" 39.	Half-bred Ewe	"
" 40.	Three-quarters-bred Hoggett.....	"
" 41.	Port Phillip Ercildoune Clip	Australia
" 42.	Fine Merino, South Australia.....	"
" 43.	Medium Merino, South Australia.....	"
" 44.	Strong Merino, South Australia.....	"
" 45.	Lincoln Merino Come-back, South Australia.....	"
" 46.	Leicester Merino Half-bred, South Australia.....	"
" 47.	Romney Merino Half-bred, South Australia.....	"
" 48.	Queensland First Combing	"
" 49.	Victoria Super Combing	"
" 50.	Tasmanian Super Combing.....	Tasmania
" 51.	Port Phillip Cross-bred Lamb's Wool	Australia
" 52.	Oran Fleece, Unwashed	Africa
" 53.	Tunisian Sheep's Wool.....	Tunis
" 54.	Merino (First Prize).....	Cape of Good Hope, Bedford
" 55.	" " "	Karoo
" 56.	Natal Fleece, Super.....	Natal
" 57.	St. Denis Skin Wool, Merino	France, St. Denis
" 58.	Merino (Saxony Blood) Medium.....	Hungary, Debreczin
" 59.	Central States, Fleece Wool	Italy
" 60.	Merino Fleece, Fine Delaine.....	Spain, Prov. de Sagorra
" 61.	Churro Fleece, Unwashed	Spain, Churro
" 62.	Kassapbatchia Skin Wool, Super	Turkey in Europe

CLASS II.

No. 63.	Peruvian Islay Alpaca, Black, White.....	Peru
" 64.	Peruvian Llama, Gray, Black, Vicuna, Brown.....	"
" 65.	Vicuna Fleece	"
" 66.	Brown Mohair or Gingellines.....	Turkey in Asia
" 67.	Cashmere White.....	China
" 68.	Kwei-wha-Cheng Camel's Hair, Third Quality.....	China, Tientsin
" 69.	East India White Cashmere.....	East India
" 70.	Dorset Horns, Wether	England
" 71.	Hereford, Fleece Washed.....	"
" 72.	Leicester, Fleece Wool	"
" 73.	Leicester Full Blood, South Australia	Australia
" 74.	Lincoln, Fleece Wool.....	England
" 75.	Pure Bred Lincoln, Uruguay.....	Uruguay
" 76.	Lincoln Full Blood, South Australia.....	Australia
" 77.	Lincoln Ewe.....	New Zealand
" 78.	Romney Marsh	Uruguay
" 79.	" " Pure Bred, South Australia.....	Australia
" 80.	" " Ewe	New Zealand
" 81.	" " Hoggett	"

No. 82.	Romney Marsh-Lincoln Lamb, Medium	New Zealand
" 83.	" " Hoggett	" "
" 88.	Shropshire, Fleece Wool	England
" 85.	Stafford, Fleece Wool	"
" 86.	Sussex Down, Fleece Wool	"
" 87.	Wiltshire Down, Fleece Wool	"
" 88.	Yorkshire, Fleece Wool	"
" 89.	Irish, Fleece Wool	Ireland
" 90.	Blackface and Cheviot, Half-bred Ewe	Scotland
" 91.	" " Cross-bred Hogs	"
" 92.	" " Leicester, Lamb-skin Wool	"
" 93.	Cheviot Hogs	"
" 94.	" and Leicester, Half-bred Hogs	"

CLASS III.

No. 95.	Kandahar Soft White	Afghanistan
" 96.	China Wool, First Quality	China
" 97.	Ball Wool "Kalgan"	China, Tientsin
" 98.	Toria, First White	East India
" 99.	Marwar, Coarse White	East India, Marwar
" 100.	Vicaneer, First White	East India
" 101.	Georgia B., First and Second Clip	Asia, Georgia
" 102.	B O., First Clip	" "
" 103.	Bokhara Black Fleece	Persia, Bokhara
" 104.	Khorassan Fleece, First Clip	Persia
" 105.	Aleppo, Fleece Unwashed	Syria
" 106.	Orfa, Fleece Unwashed	"
" 107.	Angora Hair, First Quality	Turkey, Koniah
" 108.	Native Angora, First Quality	Asiatic Turkey, Angora
" 109.	Angora Eskishehr	Turkey, Eskishehr
" 110.	Angora Hair (Karoo)	Cape of Good Hope, Karroo
" 111.	Mosul or Awassi Fleece	Persia
" 112.	Blackface Highland Laid Fleece	Scotland
" 113.	" " Sorted Haslock Glasgow Pulling....	"
" 114.	Washed Iceland Wool, Average	Iceland
" 115.	Oporto Fleece, Washed	Portugal
" 116.	Calmuc Fleece	Russia
" 117.	Donskoi Odessa	"
" 118.	Camel's Hair	"
" 119.	Servian Skin Wool	Turkey

UNITED STATES WOOLS.

No. 120.	Improved Saxony Ewe	Pennsylvania, Washington Co.
" 121.	XX Clothing Merino Ewe	New York, Onandaga Co.
" 122.	U.S. Spanish Merino XX Delaine Ewe, So. Carolina, Laurens Co.	
" 123.	" Mauchamp Merino XX Delaine	Ohio, Harrison Co.
" 124.	" Merino X Delaine Ewe	Pennsylvania, Harrison Co.
" 125.	Dickinson Delaine X Delaine	Wisconsin, River Falls
" 126.	" Merino	Colorado, Windsor Co.
" 127.	" " X Clothing	New York, Rush Co.
" 128.	" Shropshire, Three-eighths Combing Ewe, Ohio, Delaware Co.	
" 129.	" " One-quarter Combing	Ohio, Delaware Co.

Obituary.

ROBERT BLEAKIE.

MR. ROBERT BLEAKIE, one of the oldest and best known of the wool manufacturers of New England, died on Tuesday, April 3, at his home in Hyde Park, Mass., at the age of eighty-three. Mr. Bleakie, a native of Scotland, had been since 1847 a resident of America. His father came to Salisbury, Mass., to put into operation what are said to be the first fancy woolen looms in this country, and the son took to his father's profession and as a youth became himself a skilled weaver. In 1852 Robert Bleakie became the superintendent of weaving of the Elm Street Mills of Providence, Rhode Island, and twelve years later he became the superintendent of the Hyde Park Woolen Company. In 1876 he undertook, with his brother, John Bleakie, and Charles F. Allen, the operation of the Webster Mills at Sabattus, Me. In 1878 Robert Bleakie & Company purchased the Hyde Park Mills, controlling these, the Sabattus Mills, and a third mill at Amesbury, Mass. For a long time Mr. Bleakie was the president of the Hyde Park Savings Bank and he was also the president of the Hyde Park Water Company.

Mr. Bleakie possessed a vigorous personality and was frequently prominent as a controversialist over various public issues. He was for many years an earnest advocate of free wool. Later he contended strongly that any duty upon wool should be an ad valorem rate. He had a wide acquaintance among his fellow-manufacturers and was highly regarded by them as a man of thorough technical experience and tenacious convictions.

He leaves a widow, a daughter, Mrs. George H. Whiting, and two sons, Mr. William J. Bleakie, manager of the Sabattus Mills, and Mr. Eugene W. Bleakie of Providence.

Editorial and Industrial Miscellany.

THE NEW TARIFF COMMISSION.

NEITHER NON-PARTISAN NOR REPRESENTATIVE OF BUSINESS — PROVISIONS OF THE LAW.

PRESIDENT WILSON sent to the Senate, on March 14 last, his nominations for the Tariff Commission authorized in sections 700-709 of the general revenue law of September 8, 1916. He had made no haste in his appointments, which were not received during the last and short session of the Sixty-fourth Congress, but were submitted to the special session of the Senate which followed for the purpose of confirming nominations.

The Tariff Commission, however, was not confirmed at this session; perhaps it was not anticipated that it would be. These are the members of the Commission as nominated — six in number:

Professor Frank W. Taussig, Chairman. Professor Taussig is a native of St. Louis, of German parentage. He has been connected with Harvard University since 1882, and since 1892 has been professor of economics there. Among his written works are "A Tariff History of the United States," 1888; "Wages and Capital," 1896; "Principles of Economics," 1911; and "Some Phases of the Tariff Question," 1915. In a strongly protectionist community, Professor Taussig has always been known as an outspoken free trader, opposed to the principle and practice of protection. As his books show, he has been especially hostile to protection for the wool manufacture in America — first taking the position that the industry could not be firmly and profitably established here, though subsequently modifying this judgment and holding that at least the fine goods manufacture could not be naturalized in the United States. Professor Taussig has always been classed as a Democrat in national politics, and is nominated for the full twelve-year term.

Daniel C. Roper, of McCall, South Carolina. Mr. Roper was a clerk of the Committee on Ways and Means under Chairman Underwood from 1910 to 1913, when the present Simmons-

Underwood tariff for revenue only was being formulated. Subsequently he was rewarded for his services by promotion at the hand of President Wilson to the place of First Assistant Postmaster General, which he resigned in 1916 to join in the publicity work of the Democratic National Committee. Mr. Roper is a Southern Democrat and a believer in free trade, or its practical equivalent, a tariff for revenue only, and is nominated for a ten-year term.

David J. Lewis, of Cumberland, Maryland. Mr. Lewis is a native of Pennsylvania, of Welsh parentage, a working coal miner in early life, afterward a lawyer. He was a Representative from the Sixth Maryland District in the Sixty-second, Sixty-third, and Sixty-fourth Congresses, and was Chairman of the Committee on Labor of the House, an active force in the American Federation of Labor, proudly wearing his union card in Washington. In 1916 Mr. Lewis ran as the Democratic anti-protectionist candidate against the Republican protectionist candidate, J. I. France, in the election for United States Senator in Maryland, and was defeated. He is a Democrat, a single tax advocate, and a free trader, and is nominated for an eight-year term.

William Kent, of Kentfield, California. Mr. Kent is a native of Chicago and a graduate of Yale University, but has been a resident of California during most of his life. He was elected to the Sixty-second Congress from the First California, an agricultural, district, as an anti-Republican Representative, and reelected to the Sixty-third and Sixty-fourth Congresses. Mr. Kent signaled his appearance in the House by a fervid speech violently attacking the protective tariff system, and in 1916 he was president of the Woodrow Wilson Independent League and a manager of the Democratic presidential campaign in California. Mr. Kent is a free trader and like Mr. Lewis is said to be a believer in the single tax theory of Henry George.

W. S. Culbertson, of Emporia, Kansas. Mr. Culbertson is a graduate of Yale University and served as an employee of the Tariff Board headed by Professor Henry C. Emery, under the Taft Administration, when he took part in the Board's inquiry into Schedule K, wool growing and the wool manufacture. He is a Progressive in politics, and is said to have written the Progressive tariff plank in the national campaign of 1912. Senator Curtis of Kansas declares that Mr. Culbertson has been a pro-

tectionist in general sympathy, but apparently he has not recently been a Republican. He has been holding office under this Administration as an examiner in the legal department of the Federal Trade Commission. Mr. Culbertson is nominated for a four-year term.

E. P. Costigan, of Denver, Colorado. Mr. Costigan is a lawyer by profession, and was the Progressive candidate for Governor of Colorado in 1912 and 1914 — in the former year the movement which he led against the Republicans delivered Colorado over to the Democracy. He is said to have been “enthusiastically supported” for the Tariff Commission by the two Democratic Senators, Thomas and Shafroth, of Colorado, and is nominated for a two-year term.

The first section of the law creating the Commission carefully stipulates that “not more than three” members of the Commission “shall be members of the same political party.” Four of the six members of the new Commission are manifestly Democrats; the two others seem to be fairly classified as Progressives; not one is a Republican; only one has any claim whatever to be regarded as a protectionist. All six apparently supported President Wilson in the campaign of 1916. These are facts which perhaps speak for themselves with sufficient eloquence.

There is not one man on the board who can be described as an actual merchant or manufacturer. All but Professor Taussig, the chairman, and Mr. Culbertson, the only one suspected of protectionist views, have been ardent politicians in recent campaigns against the Republican protectionist party. Professor Taussig is a fair, able example of his school of academic, economic thought; ex-Congressman Lewis, as has been said, is an agent of and spokesman for organized labor. But American manufacturing and American business have not one representative upon this Commission, which is created ostensibly to deal with problems of business. Such a body cannot ask serious consideration as either non-partisan or bi-partisan. It is a partisan tribunal in an extreme form—it does not contain a single qualified adherent of the policy that has prevailed in the financial and economic affairs of our Federal government throughout almost its entire existence.

It is only repeating what has been said many times in Congress and the press, that lack upon this board of even one member with broad experience and thorough practical knowledge of the

national industries is a surprise and a disappointment to the country. But the Commission has been nominated by the responsible Chief Executive and will be desirous very soon of beginning its active work. American industries, including that which the National Association of Wool Manufacturers represents, will be prepared to give to the Commission whatever assistance may be possible in the arduous labor before it, and whatever data the officials of the Association may possess or can secure, as well as such practical experience as they may have acquired, will be fully and freely put at the service of the Commission whenever it may be prepared to make a study of the American wool manufacture.

All of the terms of the sections of the revenue law of last year creating the Commission are so important, of such immediate interest, that we present them entire, and bespeak for them the careful reading of manufacturers :

TITLE VII. — TARIFF COMMISSION.

SEC. 700. That a commission is hereby created and established, to be known as the United States Tariff Commission (hereinafter in this title referred to as the commission), which shall be composed of six members, who shall be appointed by the President, by and with the advice and consent of the Senate, not more than three of whom shall be members of the same political party. In making said appointments members of different political parties shall alternate as nearly as may be practicable. The first members appointed shall continue in office for terms of two, four, six, eight, ten, and twelve years, respectively, from the date of the passage of this act, the term of each to be designated by the President, but their successors shall be appointed for terms of twelve years, except that any person chosen to fill a vacancy shall be appointed only for the unexpired term of the member whom he shall succeed. The President shall designate annually the Chairman and Vice-Chairman of the commission. No member shall engage actively in any other business, function, or employment. Any member may be removed by the President for inefficiency, neglect of duty, or malfeasance in office. A vacancy shall not impair the right of the remaining members to exercise all the powers of the commission, but no vacancy shall extend beyond any session of Congress.

SEC. 701. That each Commissioner shall receive a salary of \$7,500 per year, payable monthly. The commission shall appoint a secretary, who shall receive a salary of \$5,000 per year, payable in like manner, and it shall have authority to employ and fix the compensations of such special experts, examiners, clerks,

and other employees as the commission may from time to time find necessary for the proper performance of its duties.

With the exception of the secretary, a clerk to each Commissioner, and such special experts as the commission may from time to time find necessary for the conduct of its work, all employees of the commission shall be appointed from lists of eligibles to be supplied by the Civil Service Commission and in accordance with the Civil Service Law.

The principal office of the commission shall be in the City of Washington, but it may meet and exercise all its powers at any other place. The commission may, by one or more of its members, or by such agents as it may designate, prosecute any inquiry necessary to its duties in any part of the United States or in any foreign country.

SEC. 702. That it shall be the duty of said commission to investigate the administration and fiscal and industrial effects of the customs laws of this country now in force or which may be hereafter enacted, the relations between the rates of duty on raw materials and finished or partly finished products, the effects of *ad valorem* and specific duties and of compound specific and *ad valorem* duties, all questions relative to the arrangement of schedules and classification of articles in the several schedules of the customs law, and, in general, to investigate the operation of customs laws, including their relation to the Federal revenues, their effect upon the industries and labor of the country, and to submit reports of its investigations as hereafter provided.

SEC. 703. That the commission shall put at the disposal of the President of the United States, the Committee on Ways and Means of the House of Representatives, and the Committee on Finance of the Senate, whenever requested, all information at its command, and shall make such investigations and reports as may be requested by the President or by either of said committees or by either branch of the Congress, and shall report to Congress on the first Monday of December of each year hereafter a statement of the methods adopted and all expenses incurred, and a summary of all reports made during the year.

SEC. 704. That the commission shall have power to investigate the tariff relations between the United States and foreign countries, commercial treaties, preferential provisions, economic alliances, the effect of export bounties and preferential transportation rates, the volume of importations compared with domestic production and consumption, and conditions, causes, and effects relating to competition of foreign industries with those of the United States, including dumping and cost of production.

SEC. 705. That upon the organization of the commission, the Cost of Production Division in the Bureau of Foreign and

Domestic Commerce in the Department of Commerce shall be transferred to said commission, and the clerks and employees of said division shall be transferred to and become clerks and employees of the commission, and all records, papers, and property of the said division and of the former Tariff Board shall be transferred to and become the records, papers, and property of the commission.

SEC. 706. That for the purposes of carrying this title into effect the commission or its duly authorized agent or agents shall have access to and the right to copy any document, paper, or record, pertinent to the subject matter under investigation, in the possession of any person, firm, co-partnership, corporation, or association engaged in the production, importation, or distribution of any article under investigation, and shall have power to summon witnesses, take testimony, administer oaths, and to require any person, firm, co-partnership, corporation, or association to produce books or papers relating to any matter pertaining to such investigation. Any member of the commission may sign subpoenas, and members and agents of the commission, when authorized by the commission, may administer oaths and affirmations, examine witnesses, take testimony, and receive evidence.

Such attendance of witnesses and the production of such documentary evidence may be required from any place in the United States at any designated place of hearing. And in case of disobedience to a subpoena the commission may invoke the aid of any district court of the United States in requiring the attendance and testimony of witnesses and the production of documentary evidence, and such court within the jurisdiction of which such inquiry is carried on may, in case of contumacy or refusal to obey a subpoena issued to any corporation or other person, issue an order requiring such corporation or other person to appear before the commission, or to produce documentary evidence if so ordered, or to give evidence touching the matter in question; and any failure to obey such order of the court may be punished by such court as a contempt thereof.

Upon the application of the Attorney General of the United States at the request of the commission, any such court shall have jurisdiction to issue writs of mandamus commanding compliance with the provisions of this title or any order of the commission made in pursuance thereof.

The commission may order testimony to be taken by deposition in any proceeding or investigation pending under this title at any stage of such proceeding or investigation. Such depositions may be taken before any person designated by the commission and having power to administer oaths. Such testimony shall be reduced to writing by the person taking the deposition, or under his direction, and shall then be subscribed by the deponent. Any person, firm, co-partnership, corporation, or association, may be

compelled to appear and depose and to produce documentary evidence in the same manner as witnesses may be compelled to appear and testify and produce documentary evidence before the commission, as hereinbefore provided.

Witnesses summoned before the commission shall be paid the same fees and mileage that are paid witnesses in the courts of the United States, and witnesses whose depositions are taken and the persons taking the same, except employees of the commission, shall severally be entitled to the same fees and mileage as are paid for like services in the courts of the United States: *Provided*, That no person shall be excused, on the ground that it may tend to incriminate him or subject him to a penalty or forfeiture, from attending and testifying, or producing books, papers, documents, and other evidence, in obedience to the subpoena of the commission; but no natural person shall be prosecuted or subjected to any penalty or forfeiture for or on account of any transaction, matter, or thing as to which, in obedience to a subpoena and under oath, he may so testify or produce evidence, except that no person shall be exempt from prosecution and punishment for perjury committed in so testifying.

SEC. 707. That the said commission shall in appropriate matters act in conjunction and coöperation with the Treasury Department, the Department of Commerce, the Federal Trade Commission, or any other departments, or independent establishments of the Government, and such departments and independent establishments of the Government shall coöperate fully with the commission for the purposes of aiding and assisting in its work, and, when directed by the President, shall furnish to the commission, on its request, all records, papers, and information in their possession relating to any of the subjects of investigation by said commission and shall detail, from time to time, such officials and employees to said commission as he may direct.

SEC. 708. It shall be unlawful for any member of the United States Tariff Commission, or for any employee, agent, or clerk of said commission, or any other officer or employee of the United States, to divulge, or to make known in any manner whatever not provided for by law, to any person, the trade secrets or processes of any person, firm, co-partnership, corporation, or association embraced in any examination or investigation conducted by said commission, or by order of said commission, or by order of any member thereof. Any offense against the provisions of this section shall be a misdemeanor and be punished by a fine not exceeding \$1,000, or by imprisonment not exceeding one year, or both, in the discretion of the court, and such offender shall also be dismissed from office or discharged from employment. The commission shall have power to investigate the Paris Economy Pact and similar organizations and arrangements in Europe.

SEC. 709. That there is hereby appropriated, for the purpose of defraying the expense of the establishment and maintenance of the commission, including the payment of salaries herein authorized, out of any money in the Treasury of the United States not otherwise appropriated, the sum of \$300,000 for the fiscal year ending June 30, 1917, and for each fiscal year thereafter a like sum is authorized to be appropriated.

Particular attention is called to Section 702, prescribing the scope of inquiries of the Commission, to Section 706 setting forth the right of the Commission to examine papers and records and require evidence, and to Section 708 protecting confidential information. The Commission is given very complete powers, coupled with certain safeguards the need of which should be unquestioned.

WOOL AUCTIONS FOR BOSTON?

A CONSIDERATION OF DR. PRATT'S PLAN FOR MAKING THE NEW ENGLAND CAPITAL A WORLD MARKET.

IN a long and interesting address recently in the city of Boston, Dr. Edward Ewing Pratt, the Chief of the Bureau of Foreign and Domestic Commerce of the Department of Commerce in Washington, argued earnestly for a plan of making Boston the world center of the wool trade by instituting in that city regular wool auctions of the kind long maintained in London. This address of Dr. Pratt abounds with interesting statistical records of the currents of world-commerce and of the production and consumption of the various countries that are the most active factors in the wool and woollen industry. It is undeniably true, as Dr. Pratt contends, that there will be an increasing demand in the United States for the wools of Australasia and South America because the activities of the wool manufacture here are increasing very much more steadily than domestic facilities for wool growing. It is not at all probable that when this present war has ended we shall be purchasing wool very heavily from London, or that the auctions there will mean again what they have meant to the merchants and manufacturers of the United States.

But are wool auctions essential to bring a great world wool trade to Boston, or, perhaps speaking more precisely, to keep it here? Is it not likely that the very magnitude of the American wool manufacture and the strength with which the Boston wool trade is managed and financed will be sufficient for this purpose?

Few records of commercial advance are more striking than the enhanced importance of Boston as a wool market since the opening of the war. Thus in 1913 only 50,887,889 pounds of foreign wool of Class I. were imported at Boston. In 1914 the imports at that port were 100,371,290 pounds — growing rapidly to 161,405,006 pounds in 1915 and to 230,947,637 pounds in 1916. Boston is inferior to New York in direct steamship facilities, but the market of the former city exerts a compelling influence on the wools of the world in general. The opening of the Panama Canal and the entry into South American commerce, since the war, of many American steamers, not controlled by the European services, that run directly from South America to New York have assisted Boston to increase its importance as a world wool market.

But all this has been accomplished without any thought of the establishment of wool auctions in Boston, and in view of the highly efficient organization of the present Boston wool trade and the powerful backing which it receives from Boston banks, it is difficult to be convinced that auctions will be necessary when the war has ended. A considerable quantity of wool imported into the port of Boston comes on the direct order of mills that have bought for their own consumption, but most of the foreign wools that come to Boston come to be sold by merchants to manufacturers. The established method is the method of private sale, and there is no present sign that this is going to be or need be lessened. Those who come into the Boston market to purchase wool come prepared to adopt the prevalent method in the market. It is the method to which they are accustomed — the method to which the wool merchants themselves are also accustomed. It has worked for many years apparently to the mutual advantage of merchant and manufacturer. Auctions would be a new thing to merchant and manufacturer alike — and not only a new but apparently an unnecessary expedient. There are Boston wool houses that have firm connections all over the world, and through these connections are enabled to procure the wools which experience teaches them American mills are most certain to require.

Dr. Pratt's plea that Boston should remain a great world wool market is sound and reasonable. But it is not and cannot be made manifest that the particular method of auctions for wool is indispensable to the achievement of such a purpose. Dr. Pratt may not be aware that large quantities of wool are sold in London at private sale between the auctions and that the home grown English wools are usually bought at the county fairs. The Panama Canal brings Boston very appreciably nearer the great wool growing continent of Australia. There would seem to be small justification for freighting colonial wool right by the gates of Boston to London and then, after auctions there, to bring it back again. British corporations and British influence cannot remain perpetually in control of our steamship communication with South America. After the war it is certain that there will be more direct American steamship services to all parts of the world—all calculated to prevent American commerce from remaining tributary to London. In Boston, with its vigorous and powerful banks, the financial facilities will always be equal to any probable demand in the wool trade or in any other.

DISINFECTION OF WOOLS.

AN IMPORTANT MODIFICATION OF THE RULINGS OF GOVERNMENT DEPARTMENTS.

AMERICAN wool manufacturing was seriously threatened by a recent joint order of the Treasury Department and the Department of Agriculture in Washington, imposing rigorous methods of disinfection on the importations of raw and scoured wool hair and noils. The purpose of the order was to check the spread of anthrax, rinderpest, and foot and mouth disease. So high a temperature in disinfection was originally demanded that materials would suffer gravely in quality and there would be a costly impairment of their manufacturing strength. Moreover, there were no agencies by which the requisite certification of freedom from contamination could be secured in foreign countries, notably in Australia.

The peril was promptly recognized and the situation was quickly met by the officials of the Boston Wool Trade Association

and the Philadelphia Wool and Textile Association, which made a vigorous protest to Washington. Very effective, indeed, were affidavits from experienced merchants and manufacturers that in their business careers they had never known of a case of anthrax, etc., introduced by wool or hair. Important amended parts of the ruling as revived are as follows :

REGULATION V.

Section 1. Raw wool or hair, clipped from live animals, wool or hair which has been properly scoured, and noils of wool and hair which have been similarly processed, may be imported without disinfection or certification.

Section 2. Picked or pulled wool or hair may be imported if accompanied by a declaration of the exporter, authenticated by the United States Consul at the port of shipment, designating the bales or packages thereof by their markings, indicating the consignor, consignee, and number of the invoice, and stating that all the wool or hair contained in the bales or packages came from animals free from anthrax. The consignee or owner of the wool or hair, or his agent, shall be required to file a satisfactory bond or agreement assuring proper facilities of disinfection at the establishment to which the shipment is consigned, and that such wool or hair will be disinfected or sterilized by proper exposure to a temperature of not less than 165° Fahrenheit prior to any transfer or reshipment from such establishment. If such wool or hair, when offered for entry, is unaccompanied by the above-mentioned declaration, its entry will be permitted upon condition that the consignee or owner thereof or his agent files a satisfactory bond or agreement assuring proper facilities for disinfection at the establishment to which the shipment is consigned, and that all of such wool or hair will be disinfected or sterilized by proper exposure to a temperature of not less than 200° Fahrenheit for at least 15 minutes prior to any transfer or reshipment from such establishment.

Section 3. Importation of abattoir pulled wool will be permitted without restrictions from any country maintaining a veterinary inspection system ascertained by the Secretary of Agriculture and certified by him to the Secretary of the Treasury, from time to time, to be the substantial equivalent of the veterinary inspection system maintained by the United States, when accompanied by a certificate signed by an official veterinary inspector of such country to the effect that said wool was procured from sheep slaughtered therein under Government inspection, and that in the process of wet pulling and drying it has been subjected to a temperature of not less than 165° Fahrenheit. Such certificate must indicate the number of bales, marks, names, and addresses of consignor and consignee, district of origin, date of shipment, invoice number, and vessel transporting.

Section 4. Wool or hair not otherwise provided for in these regulations, or not complying with the provisions thereof, may be imported upon the conditions that such articles be shipped from port of entry to destination in sealed cars or satisfactorily sealed containers after the bales have been whitewashed at the port of entry under the supervision of an inspector of the Bureau of Animal Industry, that the destination be a factory or establishment having satisfactory facilities for sterilizing or disinfecting the same, and that they will there be sterilized or disinfected by proper exposure to a temperature of not less than 200° Fahrenheit for at least 15 minutes, or in such manner as may be directed by the Chief of the Bureau of Animal Industry, prior to any transfer or reshipment therefrom. Such wool or hair may be stored in bond at the port of entry, subject to shipment and sterilization or disinfection, as herein provided, on being released from bond. The consignee, owner, or his agent, will be required to file a satisfactory bond or agreement to fulfil all requirements as to shipment or disinfection.

It is still required that pulled wool shall be certificated or disinfected, and an earnest effort will be made to secure a liberalization of this provision also.

COMPARATIVE STATEMENT OF IMPORTS AND EXPORTS OF
WOOL AND MANUFACTURES OF WOOL FOR THE TWELVE
MONTHS ENDING DECEMBER 31, 1915 AND 1916.

GROSS IMPORTS.

ARTICLES AND COUNTRIES.	Quantities for Twelve Months ending December 31.		Values for Twelve Months ending December 31.	
	1915.	1916.	1915.	1916.
WOOL, HAIR OF THE CAMEL, GOAT, ALPACA, AND OTHER LIKE ANIMALS, AND MANUFACTURES OF:				
UNMANUFACTURED—				
Class 1—Clothing (free)	<i>Pounds.</i>	<i>Pounds.</i>		
Imported from—				
Belgium	43,488,636	8,867,900	\$12,145,668	\$2,883,000
United Kingdom	86,826,879	133,749,074	21,740,176	40,077,461
Argentina	15,823,599	11,990,386	4,400,783	4,417,735
Uruguay	101,929,674	115,354,523	24,248,747	34,479,047
Australia	836,019	15,954,906	213,103	5,507,819
New Zealand	46,660,031	70,483,940	7,616,873	15,644,751
Other countries				
Total	295,564,838	356,400,729	\$70,365,350	\$103,009,813
Class 2—Combing (free)				
Imported from—				
Turkey in Europe				
United Kingdom	4,841,016	997,970	\$1,457,087	\$389,004
Canada	6,797,551	4,855,643	1,980,723	1,893,021
South America	591,499	3,615,004	80,047	801,131
Other countries	1,034,041	613,834	236,152	167,390
Total	13,264,107	10,082,451	\$3,754,009	\$3,250,546
Class 3—Carpet (free)				
Imported from—				
Russian Empire	2,976,397	567,206	\$576,152	\$144,011
United Kingdom	25,311,885	5,259,879	5,559,570	1,388,430
Other Europe	2,551,533	6,787,038	514,035	1,607,857
Argentina	12,878,291	14,184,454	2,756,999	2,856,740
China	41,452,568	35,328,465	7,224,510	7,973,880
East Indies	2,435,669	1,163,304	597,480	259,290
Turkey in Asia	360,831		77,499	
Other countries	5,812,131	12,873,702	1,022,921	2,709,504
Total	93,782,305	76,166,548	\$18,329,166	\$16,939,712
Hair of the Angora goat, etc. (dutiable)	10,110,042	6,540,196	\$2,594,091	\$2,323,783
Total unmanufactured	412,721,292	449,189,924	\$95,042,616	\$125,523,854
MANUFACTURES OF—				
Carpets and carpeting, etc.	<i>Sq. Yards.</i>	<i>Sq. Yards.</i>		
Imported from—				
Turkey in Europe	15,961		\$72,717	
United Kingdom	461,489	382,241	894,210	\$1,273,402
Asia	324,303	356,807	1,047,517	1,441,229
Other countries	48,340	30,458	330,196	145,065
Total	850,093	769,536	\$2,344,640	\$2,859,696

COMPARATIVE STATEMENT OF IMPORTS AND EXPORTS OF
WOOL, ETC.GROSS IMPORTS. — *Continued.*

ARTICLES AND COUNTRIES.	Quantities for Twelve Months ending December 31.		Values for Twelve Months ending December 31.	
	1915.	1916.	1915.	1916.
	<i>Pounds.</i>	<i>Pounds.</i>		
CLOTHS (dutiable)				
Imported from—				
Belgium	374,679	33,545	\$442,988	\$40,858
Germany	217,381		258,354	
United Kingdom . .	6,212,561	5,752,053	6,001,007	6,659,524
Other countries . . .	221,655	22,605	258,230	40,944
Total	{ lbs. 7,026,276 { sq. yds. 10,657,502	{ 5,808,203 { 8,423,916	\$6,960,579	\$6,741,326
DRESS GOODS, WOMEN'S AND CHILDREN'S (dutiable) —				
Imported from—				
France	57,307	24,708	\$75,076	\$51,905
Germany	446,317	713	518,866	1,149
United Kingdom . . .	2,744,499	1,000,115	2,468,845	1,223,420
Other countries . . .	71,638	40,478	89,101	55,617
Total	{ lbs. 3,319,761 { sq. yds. 13,114,995	{ 1,066,014 { 4,222,604	\$3,151,897	\$1,332,091
Press cloths for oil milling purposes (free)			\$52,778	\$20,736
Tops, pounds (dutiable)	*258,266	225,956	*126,159	126,349
Wearing apparel (duti- able)			1,117,111	1,383,350
Wool wastes (free) . . .			1,031,111	1,346,844
Yarn, pounds (dutiable)	*102,789	23,180	*79,392	27,640
All other (dutiable) . .			1,151,040	815,278
Hair of the goat, etc., manufactures of (dut.),			1,310,687	1,817,974
Total manufact- ures of			\$17,325,394	\$16,471,284

* Beginning July 1, 1915.

COMPARATIVE STATEMENT OF IMPORTS AND EXPORTS OF
WOOL, ETC.—*Continued.*

EXPORTS OF WOOL AND MANUFACTURES OF.

FOREIGN.				
ARTICLES.	1915.	1916.	1915.	1916.
	Quantities.	Quantities.	Values.	Values.
WOOL, HAIR OF THE CAMEL, GOAT, ALPACA, AND OTHER LIKE ANIMALS, AND MANUFACTURES OF:				
UNMANUFACTURED—				
Wool of the sheep, hair of the goat, camel, and other like animals:				
Class 1—Clothing, lbs.	1,443,626	2,017,607	\$450,697	\$756,075
Class 2—Combing, "	30,870	110,434	9,349	36,100
Class 3—Carpet, "	606,874	.. . . .	121,683	.. . . .
Total (lbs.)	2,081,370	2,128,041	\$581,729	\$792,175
Hair of the Angora goat, alpaca, and other like animals, lbs. . .	16,581	27,735	3,570	8,315
Total unmanufactured	2,097,951	2,155,776	\$585,299	\$800,490
MANUFACTURES OF —				
Carpets and carpeting —				
Carpets and rugs woven whole, sq. yds.	3,967	4,717	\$17,271	\$36,914
All other, sq. yds.	338	222	418	1,000
Cloths:				
Lbs.	86,407	60,981	{ 115,985	73,809
Sq. yds.	176,574	110,729		
Dress goods, women's and chil- dren's:				
Lbs.	423,059	25,255	{ 374,916	24,522
Sq. yds.	1,376,177	91,880		
Press cloths of camel's hair, for oil milling purposes . . . . .	.. . . .	.. . . .	38	8,277
Tops, lbs.	87,616	.. . . .	52,693	.. . . .
Wearing apparel . . . . .	.. . . .	.. . . .	53,837	7,706
Wool wastes . . . . .	.. . . .	.. . . .	5,763	22,943
Yarn, lbs.	4,643	890	33,994	552
All other . . . . .	.. . . .	.. . . .	103,184	22,531
Hair of the Angora goat, alpaca, etc., manufactures of . . . . .	.. . . .	.. . . .	22,295	14,759
Total manufactures of . . . .	.. . . .	.. . . .	\$795,829	\$213,013

COMPARATIVE STATEMENT OF IMPORTS AND EXPORTS OF
WOOL, Etc.EXPORTS OF WOOL AND MANUFACTURES OF. — *Concluded.*

DOMESTIC.				
ARTICLES.	1915.	1916.	1915.	1916.
	Quantities.	Quantities.	Values.	Values.
WOOL, AND MANUFACTURES OF:				
Unmanufactured, lbs. . . . .	.....	3,918,992	.....	\$2,087,510
Wearing apparel:				
Exported to —				
France . . . . .	.....	.....	\$4,338,327	\$167,706
Italy* . . . . .	.....	.....	.....	161,910
Russia in Europe* . . . . .	.....	.....	.....	3,229,442
United Kingdom . . . . .	.....	.....	1,096,865	393,923
Canada . . . . .	.....	.....	1,229,792	2,570,273
Mexico . . . . .	.....	.....	236,921	276,630
Russia in Asia* . . . . .	.....	.....	.....	2,613,518
Other countries . . . . .	.....	.....	9,365,740	1,102,197
Total wearing apparel . . . . .	.....	.....	\$16,267,645	\$10,515,599
Woolen rags, lbs.	16,704,070	9,105,515	1,315,840	1,036,113
All other . . . . .	.....	.....	25,012,854	25,890,978
Total . . . . .	.....	.....	\$42,596,339	\$37,442,690

* Not separately stated prior to Jan. 1, 1916.

204 NATIONAL ASSOCIATION OF WOOL MANUFACTURERS.

QUARTERLY REPORT OF THE BOSTON WOOL MARKET
FOR JANUARY, FEBRUARY, MARCH, 1917, AND MARCH, 1916.

DOMESTIC WOOLS. (F. NATHANIEL PERKINS.)

	1917.			1916.
	January.	February.	March.	March.
OHIO, PENNSYLVANIA, AND WEST VIRGINIA.				
(WASHED.)				
XX and above	45	47 @ 48	50 @ 52	33 @ 34
X	43 @ 45	45 @ 47	48 @ 50	31 @ 32
Blood	54 @ 55	58 @ 59	59 @ 60	40 @ 41
"	54 @ 55	58 @ 59	59 @ 60	41 @ 42
"	54 @ 55	58 @ 59	59 @ 60	41 @ 42
Fine Delaine	52 @ 53	55 @ 56	56 @ 58	39 @ 40
(UNWASHED.)				
Fine	38 @ 40	41 @ 43	43 @ 46	28 @ 30
Blood	46 @ 48	50 @ 53	53 @ 55	36 @ 37
"	47 @ 48	52 @ 54	53 @ 55	39 @ 40
"	47 @ 48	51 @ 53	53 @ 55	39 @ 40
Fine Delaine	45 @ 46	48 @ 50	50 @ 52	33 @ 34
MICHIGAN, WISCONSIN, NEW YORK, ETC.				
(UNWASHED.)				
Fine	37 @ 38	41 @ 42	42 @ 43	27 @ 28
Blood	46 @ 48	50 @ 52	53 @ 55	35 @ 36
"	45 @ 47	48 @ 50	53 @ 55	38 @ 39
"	45 @ 47	48 @ 50	50 @ 52	38 @ 39
Fine Delaine	42 @ 43	45 @ 46	48 @ 50	30 @ 31
KENTUCKY AND INDIANA.				
(UNWASHED.)				
Blood	48 @ 50	53 @ 55	57 @ 58	40 @ 41
"	48 @ 50	53 @ 55	57 @ 58	39 @ 40
Braid	40	45	47 @ 48	33 @ 34
MISSOURI, IOWA, AND ILLINOIS.				
(UNWASHED.)				
Blood	45 @ 47	48 @ 50	50 @ 52	37 @ 38
"	45 @ 47	48 @ 50	50 @ 52	37 @ 38
Braid	40	45	45 @ 46	32 @ 33
TEXAS.				
(SCOURD BASIS.)				
12 months, fine, and fine medium	100 @ 105	112 @ 115	120 @ 125	73 @ 75
Spring, fine and fine medium	88 @ 90	95 @ 100	105 @ 110	62 @ 65
Fall, fine and fine medium	75 @ 80	80 @ 85	85 @ 90	55 @ 57
CALIFORNIA.				
(SCOURD BASIS.)				
12 months, fine	95 @ 100	110 @ 112	115 @ 120	68 @ 70
Spring, fine	85 @ 90	95 @ 100	100 @ 105	60 @ 62
Fall, fine	65 @ 70	70 @ 75	78 @ 80	54 @ 56
TERRITORY WOOL: Montana, Wyoming, Utah, Idaho, Oregon, etc.				
(SCOURD BASIS.)				
Staple, fine and fine medium	110 @ 115	120 @ 125	125 @ 130	76 @ 78
Clothing, fine and fine medium	90 @ 95	100 @ 110	115 @ 120	72 @ 74
Blood	105 @ 110	110 @ 115	115 @ 120	73 @ 75
"	88 @ 90	95 @ 100	100 @ 105	70 @ 72
"	76 @ 80	85 @ 90	90 @ 95	65 @ 67
NEW MEXICO.				
(SCOURD BASIS.)				
No. 1	85 @ 90	100 @ 110	110 @ 115	68 @ 70
No. 2	80 @ 85	90 @ 95	95 @ 100	62 @ 64
No. 3	70 @ 75	75 @ 80	80 @ 85	55 @ 57
GEORGIA AND SOUTHERN.				
Unwashed	45 @ 47	48 @ 50	50 @ 52	33 @ 35

APRIL 2, 1917.

DOMESTIC WOOLS.

The first month of a new year, following stock-taking time, is a period of retrospection. January opened with buying by manufacturers more noticeable than speculative buying by dealers. At this period spinners and top makers experienced a slower trade. Foreign markets showed no particular change. The new regulation promulgated by the United States Government regarding the disinfection of foreign wools caused not a little inconvenience and uneasiness to all parties interested in importing wools. The Boston Wool Trade Association, with the coöperation of other organizations, at once took up the matter with the Government and as a result the regulations were amended in conformity with the recommendations submitted to the Government. Contracting in the West at the opening of the new year showed less activity. The news cabled from London in middle January, to the effect that the British War Trade Department expected shortly to announce the quantity of wools that America would be permitted to purchase, proved "a flash in the pan," as far as being of any practical value to this country.

February opened with the news that brought the trade to a full realization that a crisis had been reached of the gravest character in our International relations. The market in early February remained firm with no fear of a set-back in values. As the month progressed the market assumed greater activity, especially in scoured wools. Extensive speculative trading was very marked. Wool changed hands with marked rapidity.

March opened with continued active buying, both on dealers' and mill account, with a strong upward tendency of values. By the middle of the month, Congress having failed to pass appropriations for military purposes, the market assumed a more quiet tone. It was estimated that over fifty million pounds of the 1917 clip were under contract by the latter part of March.

This first quarter of 1917 closed with values firm on all classes of wool; but with a noticeable decline in the activity of the market. What demand there was came from the mills, although the business from this direction was only moderate. Nevertheless no one seemed disposed to shade prices, but held firm in anticipation of the broader buying market.

F. NATHANIEL PERKINS.

PULLED WOOLS. (W. A. BLANCHARD.)

	1917.			1916.
	January.	February.	March.	March.
Extra, and Fine A	100 @ 105	105 @ 110	105 @ 120	72 @ 80
A Super	90 @ 95	95 @ 100	95 @ 105	64 @ 70
B Super	80 @ 85	85 @ 90	90 @ 100	60 @ 67
C Super	35 @ 70	70 @ 75	70 @ 80	50 @ 56
Fine Combing	100 @ 105	105 @ 110	110 @ 120	75 @ 80
Medium Combing	90 @ 95	95 @ 100	100 @ 110	70 @ 73
Low Combing	80 @ 85	85 @ 90	90 @ 95	63 @ 67

APRIL 2, 1917.

PULLED WOOLS.

The demand for pulled wools was active and continuous throughout the quarter on the part of both dealers and manufacturers, and the movement covered equally wools of worsted and of clothing length. B supers were especially active in March on account of Government orders for army requirements.

Prices advanced steadily and with extraordinary regularity as shown in the quotations given above. The quarter closed strong with pullers sold up to production, and packers' pelts in Chicago reached the record level of \$4.00-4.25 asked.

W. A. BLANCHARD.

FOREIGN WOOLS. (MAUGER & AVERY.)

	1917.			1916.
	January.	February.	March.	March.
Australian Combing:				
Choice				41 @ 45
Good		73 @ 75	73 @ 75	39 @ 42
Average		70 @ 73	70 @ 73	35 @ 36
Australian Clothing:				
Choice				37 @ 38
Good		73 @ 75	73 @ 75	35 @ 36
Average		70 @ 73	70 @ 73	33 @ 35
Sydney and Queensland:				
Good Clothing		73 @ 75	73 @ 75	37 @ 38
Good Combing		73 @ 75	73 @ 75	40 @ 42
Australian Crossbred:				
Choice				48 @ 50
Average				45 @ 46
Australian Lambs:				
Choice				33 @ 36
Good				32 @ 34
Good Defective				30 @ 32
Cape of Good Hope:				
Choice	50 @ 53	58 @ 60	60 @ 65	33 @ 34
Average	42 @ 45	48 @ 50	50 @ 55	25 @ 27
Montevideo:				
Choice	60 @ 63	60 @ 63	64 @ 66	40 @ 42
Average	55 @ 58	58 @ 60	61 @ 63	38 @ 40
Crossbred, Choice				38 @ 40
English Wools:				
Sussex Fleece				*
Shropshire Hogs				48 @ 50
Yorkshire Hogs				*
Irish Selected Fleece				*
Carpet Wools:				
Scotch Highland, White			42 @ 43	
East India, 1st White Joria				42 @ 45
East India, White Kandahar				38 @ 40
Donskoi, Washed, White				*
Aleppo, White				
China Ball, White	40 @ 45	43 @ 48	45 @ 50	32 @ 36
" " No. 1, Open	38 @ 43	41 @ 46	43 @ 48	33 @ 37
" " No. 2, Open	36 @ 41	39 @ 44	41 @ 46	28 @ 31

* Out of market.

APRIL 2, 1917.

FOREIGN WOOLS.

The past quarter has been an exceedingly interesting one in the foreign wool market by reason of the effect of the embargoes of the English government which have shut off the exportation to America of the products of all the British colonies and dependencies, except South Africa. As a result of this New Zealand, East India, Australia, and British wools have practically disappeared from the American market and Cape and South American wools have replaced the other clothing descriptions as far as possible. Prices have advanced for all descriptions of wools, and manufacturers are placed in a difficult situation to maintain the character and quality of their goods. America now being one of the Allies, fighting side by side with England, it does not seem reasonable that she should be deprived much longer of the portion of wool which she may require for the manufacture of goods for the army. America is to help share the expenses of the war as well as to furnish every kind of support and there is no longer reason to discriminate against her in any way.

MAUGER & AVERY.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS
OF AUGUST 24, 1912.

Of the Bulletin of the National Association of Wool Manufacturers, published quarterly, at 683 Atlantic Avenue, Boston, Mass., for April 1, 1917.

STATE OF MASSACHUSETTS } ss.
COUNTY OF SUFFOLK }

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared Winthrop L. Marvin, who, having been duly sworn according to law, deposes and says that he is the Editor of the Bulletin of the National Association of Wool Manufacturers, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, National Association of Wool Manufacturers, 683 Atlantic Avenue, Boston, Mass.

Editor, WINTHROP L. MARVIN, 683 Atlantic Avenue, Boston, Mass.

Managing Editor, none.

Business Managers, none.

2. That the owners are (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock):

National Association of Wool Manufacturers, 683 Atlantic Avenue, Boston, Mass., the principal officers being: *President*, John P. Wood, Philadelphia, Pa.; *Vice-Presidents*, William M. Wood, Boston, Mass.; Frederic S. Clark, North Billerica, Mass.; George H. Hodgson, Cleveland, O.; *Secretary and Treasurer*, Winthrop L. Marvin, Boston, Mass.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are (If there are none, so state):

There are no bonds, mortgages or securities of any kind.

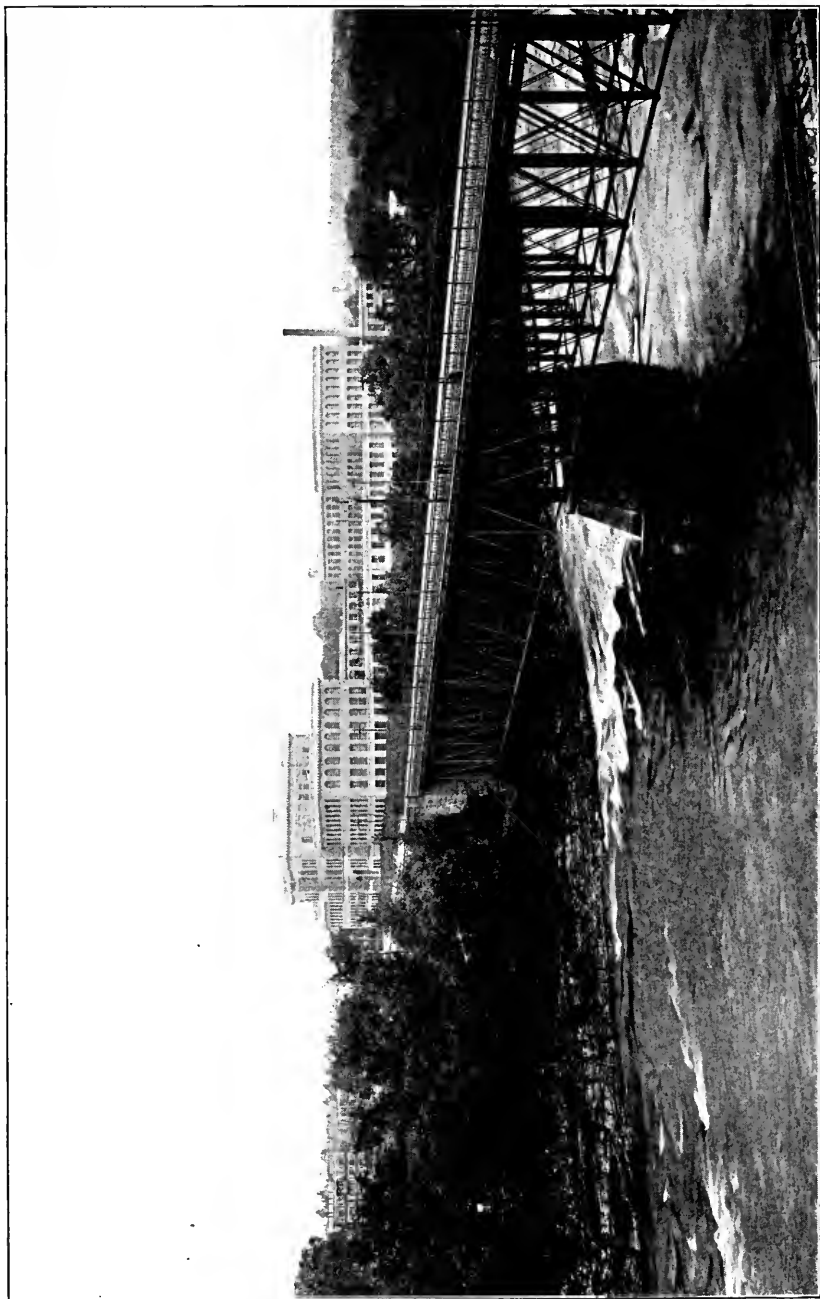
WINTHROP L. MARVIN,
Editor.

Sworn to and subscribed before me this 16th day of March, 1917.

WILLARD A. CURRIER,
Notary Public.

(My commission expires May 20, 1921.)





The Lowell Textile School.

BULLETIN

OF THE

National Association of Wool Manufacturers

A QUARTERLY MAGAZINE

DEVOTED TO THE INTERESTS OF THE NATIONAL WOOL INDUSTRY.

VOL. XLVII.]

BOSTON, JULY, 1917.

[No. III.]

THE LOWELL TEXTILE SCHOOL.

HISTORY OF THE INSTITUTION, AND THE STEADILY
BROADENING SCOPE OF ITS WORK.

By CHARLES H. EAMES, S.B., Principal.

THE movement which resulted in the establishment of the Lowell Textile School commenced as early as the year 1891, but the act of the Massachusetts Legislature which incorporated the "Trustees of the Lowell Textile School" was not passed until 1895 and the school did not formally open until January 30, 1897.

Briefly, this act of incorporation permits the establishment of a textile school in any city or town of the State, providing the textile mills of the place contain not less than 450,000 spindles and providing a payment of \$25,000 is made by the municipality. The State may then appropriate a like sum for the establishment. Under this act three textile cities availed themselves of the opportunity, viz.: Fall River, Lowell, and New Bedford.

On the board of trustees of the Lowell Textile School were representatives from the large textile interests of Lowell, Lawrence, and surrounding towns, so that the school may fairly be considered as a consolidation in the interest of textile education of the textile centers of the great Merrimac Valley district. By this it should not be inferred that the original interpretation of the act of establishment considered only a local or sectional school, but rather one that

included the interests of the entire Commonwealth and particularly of the northeast section of our country that radiates from "The Hub." This was evidenced in the selection of some men as incorporators who were outside of this section of the State and, through subsequent acts providing for additional trustees from the alumni, this broad field that the school served was recognized.

With the incorporating trustees (twenty in number) were associated, as *ex-officiis* members on the part of the State, His Honor, the Lieutenant-Governor, the Commissioner of Education, and two members appointed by the Governor, each for a term of four years. On the part of the City of Lowell, the Mayor, the Chairman of the Commissioners, and the Superintendent of Schools are members *ex-officiis*. Beside a representative from the Labor Council, there are four representatives elected by the graduates from the Day School, each serving a period of four years and one being elected each year. From the alumni representatives the board of trustees have elected from time to time four men to fill places made vacant by death or resignation in the list of life or permanent trustees.

The object of the school is clearly set forth in the acts of incorporation by the phrase "for the purpose of instruction in the theory and practical art of textile and kindred branches of industry." The permissible field is, therefore, intended to cover all instruction that may be required by those engaged in the textile or kindred branches. At the outset it was recognized that this means the utilization of all fibers, and the machinery required, as well as the housing and location of the plant for most economic production.

Of all the fibers that enter into textile manufacture, wool and cotton are the most important and the most widely used. As the readers of this Bulletin are more particularly interested in wool and its utilization, the description of the work accomplished by the school and the means and methods used in this work will center about the Wool Department and the Course of Wool Manufacturing, but it should be kept in mind that whatever is true of this branch of the work is

equally true of the Cotton Department and the Course of Cotton Manufacturing. It is the intention to develop each and every branch of the instruction equally and to the fullest extent.

It would be inferred that the purpose of this system of education was to train, not only those who contemplate entering the industry, but those who are already at work in the industry and desire to know more about their own work and also the work correlated to theirs, that they may be more useful in the industry and thereby gain higher and more responsible places.

For the former type of student the Day School was established. This school offers five courses, viz. :

Cotton Manufacturing.
Wool Manufacturing.
Textile Designing.
Chemistry and Textile Coloring.
Textile Engineering.

The first three courses are known as Diploma Courses and are three years in duration. The last two are known as Degree Courses and are four years in extent. The degrees conferred are Bachelor of Textile Chemistry (B.T.C.) and Bachelor of Textile Engineering (B.T.E.).

For the second type of student, or those who are already at work in the industry, the Evening School was established. The various courses of instruction in this school are highly specialized and are so planned and sub-divided that the needs of the pupil at work daily in the shop and mill will be best served.



Wool Sorting.

The following is a list of these courses and the name, in a measure, indicates the character and extent of the course :

Cotton Spinning	2 years.
Woolen Spinning	2 "
Worsted Spinning	3 "
Textile Designing	3 "
Free Hand Drawing	3 "
Elementary Chemistry	2 "
Textile Chemistry and Dyeing	3 "
Analytical Chemistry	3 "
Textile and Analytical Chemistry	4 "
Cotton Weaving	1 "
Woolen and Worsted Weaving	1 "
Dobby and Jacquard Weaving	1 "
Elements of Engineering	3 "
Mechanical Drawing	3 "
Machine Shop Practice	3 "
Woolen and Worsted Finishing	1 "
Cotton Finishing	1 "

Each course requires the attendance of the student for at least two nights per week over a period of twenty to twenty-two weeks of each year. Certificates are awarded to those who satisfactorily pass the work, which is determined by written examinations.

The character of the instruction given is such that it readily divides itself into seven departments as follows :

Cotton Yarn Department.
 Wool Yarn Department.
 Design and Power Weaving Department.
 Chemistry and Dyeing Department.
 Textile Engineering Department.
 Finishing Department.
 Language and History Department.

Each department is in charge of a Head Instructor and to assist him there are one or more instructors. For the past year there have been twenty-four instructors, including Head

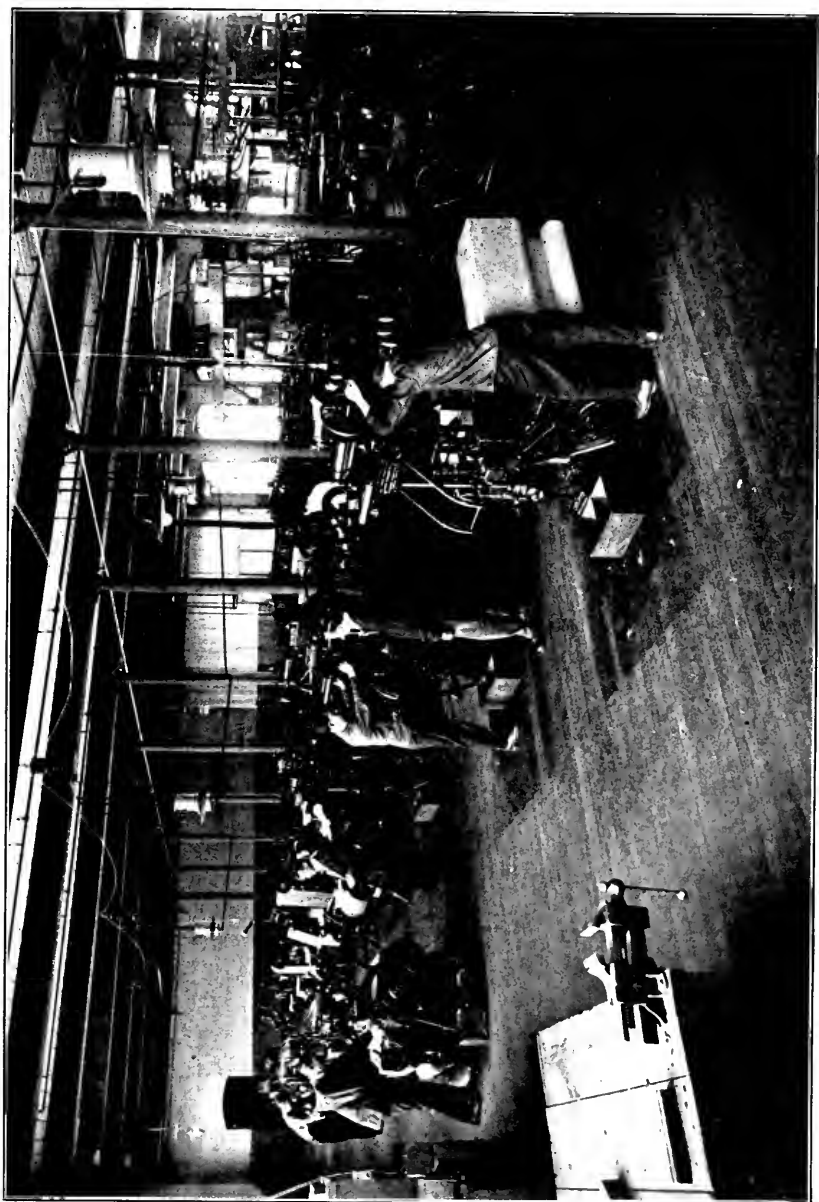
Instructors, for the day classes, with five additional instructors to assist in the larger classes of the evening school.

METHODS OF INSTRUCTION.

Since the foundation of the school it has been the constant endeavor of the management and faculty to make the instruction as thorough, broad, and of as high standing as possible. With this conception in mind the goal to be attained must ever be a higher one.

In order to do the requisite work during the three years at first allotted to each course, a higher standard of preparation was needed by each student entering the day classes. To-day no student can expect to handle the work of the first year without having first finished a complete high or preparatory school course, or its equivalent. This policy has been so closely adhered to and the grade of undergraduate work so constantly advanced, that the Legislature, upon application of the trustees and after recommendation of the State Board of Education, authorized in 1913 the conferring by the trustees of degrees as mentioned above upon each student who should satisfactorily complete either of the four-year courses. This act places this school in the category of higher and degree-granting institutions. This recognizes and accepts the criterion which this school has always maintained, namely, that the character, grade, and breadth of scientific and technical training for those who are to enter the textile industry should be equal in standing to that required for young men entering professional life. It is through a policy of this sort that the country and industry can grow and prosper.

Realizing that many young men enter higher educational institutions with a somewhat hazy idea as to their life's work and their particular adaptability to it, the first year's work at this school is entirely fundamental. The student is not required to choose his course until the middle of the year, and up to that time his studies, while laying the foundation for later work, help to direct him by making clear his forte, as well as his disqualifications.



Power Weaving Department.

For the student in the Wool Manufacturing Course these subjects consist of Textile Design, Hand Looms, Chemistry, Mechanism of Machines, Mechanical Drawing, Mathematics, English, and either French or German. These subjects are continued into the second half of the year and to them is added a course known as "Wool Yarns." Textile Design is pursued throughout the three years of the course, and while teaching the student to construct the common or standard weaves used in the manufacture of woolen and worsted goods, it also requires him to analyze fabrics and reconstruct them upon slightly modified bases. During the second and third years this work is closely associated with the instruction on the power loom, so that the analysis, reconstruction, and design with calculations may be made and this followed by the weaving and finishing of the cloth as one entire and connected problem of fabric manufacture.

Hand loom instruction aims to fix in the mind of the student the designs shown on point paper, helps to make more real these designs, and at the same time prepares, to some extent, for the work on the power loom.

A knowledge of the fundamental laws of chemistry has become such a necessary adjunct in the life of a textile manufacturer, that the course here is particularly broad and full. It includes both inorganic and organic chemistry and serves as a necessary preparation for a better understanding of Textile Chemistry given as a course in the second year. The instruction during both the first and second years is given by means of lectures, recitations, and laboratory practice, and for students of a manufacturing course is intended to acquaint him sufficiently with the reactions and processes involving chemicals and dyestuffs that he may be able to direct successfully the manufacture of a wool fabric. It is not expected that this course fits him as a trained chemist or dyer, for the Course in Chemistry and Textile Coloring meets this requirement.

The subjects of Mechanism, Mechanical Drawing, and Mathematics together are a foundation upon which can be had a broader and more accurate knowledge of all machines

used in the manufacture of yarn or fabric. Perhaps no other industry requires machines that are so intricate in design, more delicate in operation or involve a greater range of integral movements. To operate successfully the many textile machines, to know their limitations, or to be able to modify or redesign to produce a desired result, one must understand the mechanics of machines, both qualitatively and quantitatively. These same subjects also serve as preparatory to the subjects of Physics, Steam, and Electrical Engineering, and Strength of Materials given in the second and third years. These again are supports upon which a knowledge of mill construction, arrangement, and operation rests, and are presented to the student under the head of Mill Engineering. Here, as in the case of the course in Chemistry and Dyeing, the instruction aims to give the woolen and worsted manufacturer a better knowledge of factory construction and power development and transmission, that he may operate his plant in the greatest efficiency, but does not assume that he is to become a consulting mill engineer — another course known as Textile Engineering aims to prepare one for this line of work.

At the first thought of a practical mind the subjects of English or a foreign language have no place in a technical school that maintains a grade higher than the regular preparatory school, and indeed they have none, except to be useful tools in the upbuilding of a textile career. To-day is the day when maximum efficiency pays. One who can express his thoughts or give his instruction in the clearest and most accurate and concise language has available time to accomplish a great quantity of work and approaches nearer maximum efficiency. This is quite as necessary in the machine room as in the correspondence and managing departments. It is to be expected that textile school men with successful careers in the industry will be called upon for papers, reports, and other publications. The use of good English in undergraduate work, as well as in industrial and commercial life, is considered a requisite for the future manufacturer of textile material.

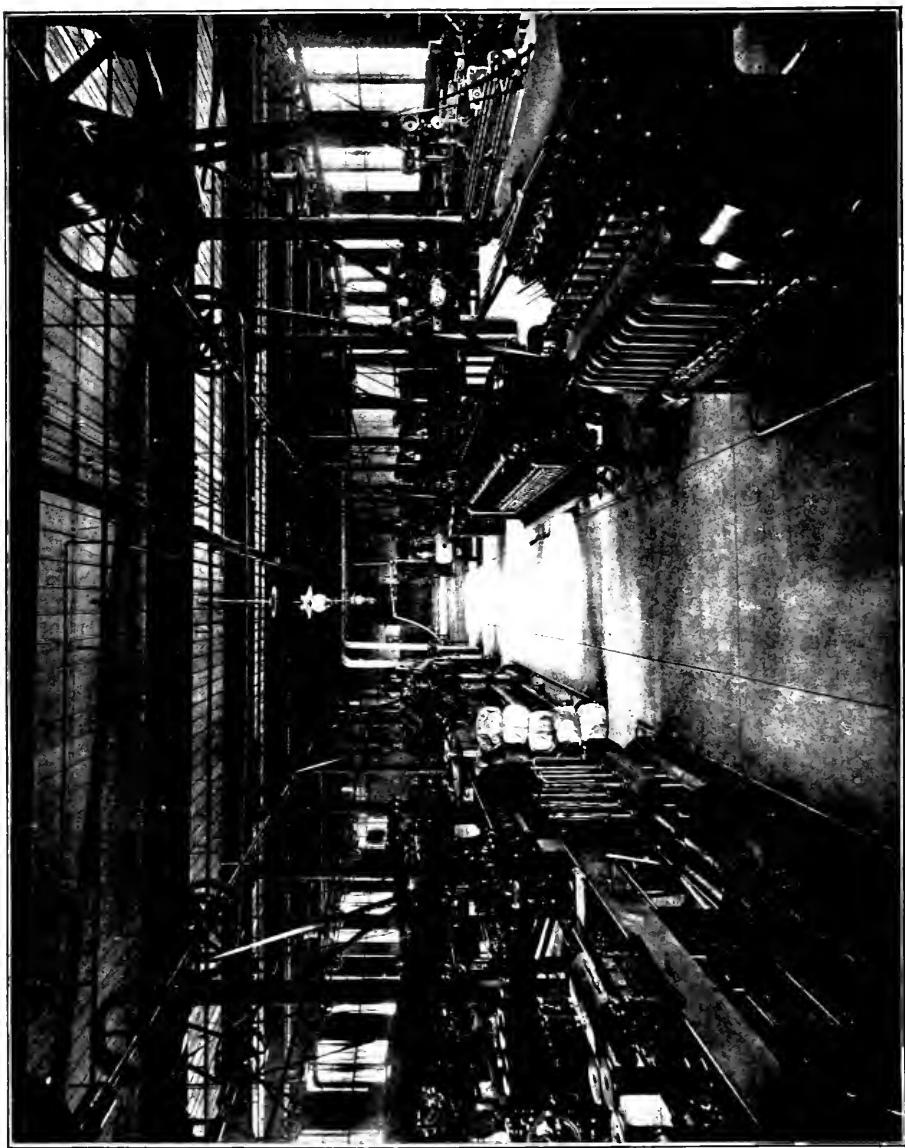
Through a knowledge of a foreign language, such as either German or French, one gains entrance to other fields of endeavor and to new methods and latest discoveries of competitors in other countries. Aside from any argument for increased breadth of training, the knowledge of these foreign languages is of practical value.

The instruction concerning the wool fiber, its physical characteristics, its growth, variety, quality, uses, and methods by means of which it is made useful to mankind is given in the Wool Yarn Department. It commences in the middle of the first year and continues throughout the remaining two and one-half years of the course. The methods employed are lectures, recitations, and machine operation. Where considerable descriptive matter is given, a class is taken by itself, and the work explained by the instructor. In turn questions are asked to make sure that the explanations are fully understood. For the instruction in the various grades of wool, location on a fleece, and methods of sorting, a section of the class with an instructor sorts a quantity of wool on the bench, and to give as full knowledge as possible in this branch of the work, as great a variety as possible of wool for sorting is obtained.

For instruction on machines the members of the class are assigned to different machines for the purpose of operation or of dismantling and erecting, that a knowledge of mechanical details may be obtained.

The general procedure in the course of instruction in yarn manufacturing is in the same order as the processes through which the wool passes from fleece to finished yarn. With the completion of the instruction of sorting, actual work of scouring and drying is carried on and problems in shrinkages are forcibly illustrated. Acquaintance with textile soaps and scouring solutions is had when a commercial quantity of wool is put through the scouring bowls and dryers.

The students then take the clean wool to the cards, either woolen or worsted, depending upon the use to which the wool is to be put, but in any event the student before completing his course must have a detailed knowledge of card-



Woolen and Worsted Yarn Department.

ing in both the woolen and worsted processes. If the cards need adjustment or grinding, this must be done as a part of the course. Speeds must be regulated to produce proper results. Following this the course requires the student to operate and adjust the woolen mule, and at the completion of the course he must prepare a thesis with necessary detail drawings describing the function of the mechanical parts of the mule and adjustments permissible. Problems and exercises in the determination of proper mixes to match a certain yarn or fabric are given during the period of instruction on the cards.

The preparatory processes in the manufacture of worsted yarn bring the student into intimate acquaintance with the comb and gill boxes. These he is required to dismantle and erect and then to run stock to produce top of proper weight and quality. From top of a given quality he is required to manufacture worsted yarn on the various machines used in the English or Bradford system. Later he carries on similar work by producing yarn, carrying the stock through the various machines of the French system. This equipment of the school was specially imported for its use and is located in a separate room where the requisite degree of humidity can be maintained.

In this department, as well as in all of the other departments, the primary object is not alone to teach students to operate certain machines, but to require them to operate them intelligently and for the purpose of solving some manufacturing problem. Ability to "fix" or adjust a machine is considered a fair test of the student's understanding of the machine. The object is at all times to stimulate the reasoning faculty of the student, to deduce from known conditions a probable result.

While pursuing his course in yarn manufacture and fiber manipulation he has also instruction in fabric construction and design, but during his third year he receives by lectures and machine work training in the finishing processes of both woolen and worsted fabrics. Here he sees most forcibly the effects of proper and improper stock, defective construction,

or incorrect weaving or yarn manufacture. The physical property of a wool fiber to "full" is brought out clearly and its effect upon the appearance of the cloth becomes evident.

As a fitting culmination to his entire work, the student, during the last of his third year, manufactures for himself enough cloth for a suit of clothes and this is usually worn at graduation. The choice of design and grade of goods is his own, but the entire work must be carried through as a definite problem in manufacture. The amount of goods to be produced must be determined and from this he must first calculate the quantity of grease wool of a given grade that is required. This is then purchased under proper supervision. Upon the receipt of the wool at the school the problem becomes a live one, for the student must keep a record of results at each and every stage of the process and prepare a final report previous to graduation.

Realizing that some may enter the manufacture of knit goods, a short course is given in the manufacture of the various types of hosiery, underwear, and other varieties of knitted fabrics. Those who wish to prepare for this particular line of work may devote more than the regular time specified.

We have set forth in considerable detail the object, methods of instruction, and subjects taught in a course designed to prepare a young man to enter the field of woolen or worsted yarn, or fabric manufacturing, that the breadth as well as the completeness may be appreciated. The wisdom of such an organization has already been justified by the fact that graduates from this course have been able to advance rapidly, whether in the particular field of wool manufacture, or in any other allied branch of textile manufacturing where the underlying principles were the same as or similar to those studied in their course of instruction at the school.

What has been described above concerning this particular field is equally true for the cotton manufacturing field. Those who, because of inclination and fitness seek the opportunities for pleasing and lucrative employment as

designer, styler, or commission merchant, are offered a course which, devoting considerable time to the design, construction, and analysis of cotton, woolen, worsted, and silk fabrics, also includes training in the manufacture of all yarns. Some chemistry and dyeing and elements of mill engineering are given in the course, owing to the frequent example of a designer serving in a mill as assistant superintendent and later rising to the managing position of the plant.

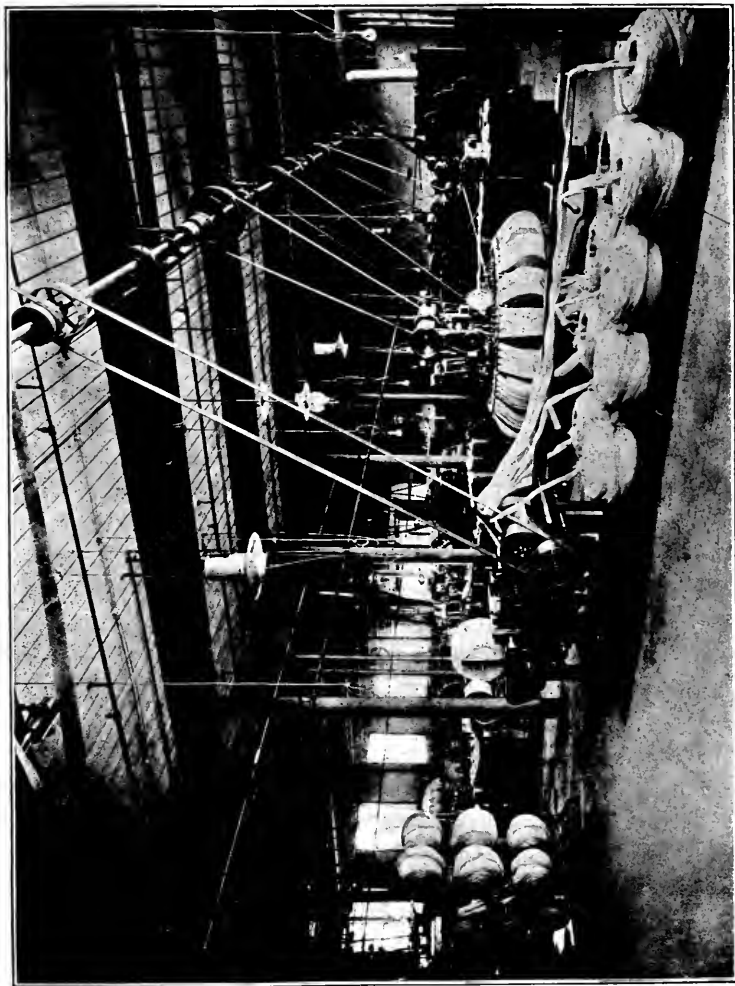
Concerning the absolute necessity of one's following some one of the above described courses in order to enter the particular branch of manufacturing, it should be kept in mind that the instruction in any course is so broad that its pursuance by a young man does not bind him to following the prospective line of manufacturing for which the course evidently prepares. The great value of any course of instruction, aside from the technical and scientific knowledge developed, is the breadth, completeness, and intensity of training derived in the undergraduate work. The so-called "personal equation" plays so important a part in the ultimate success of a young man that all methods of instruction which, in addition to teaching facts and principles, stimulate initiative, self-control, and leadership are necessary functions in the system which prepares the future manufacturer. The methods of instruction are so conducted that this quality may be stimulated.

A department of science that early comes to the attention of a student during his preparatory school course, and which arouses his interest because of its far-reaching application is chemistry. He early learns of its application in the textile field. Further study and investigation reveal a most attractive field to the scientifically inclined mind and a most profitable field to the mind that also appreciates its commercial value. The school, since its beginning, has maintained a course in Chemistry and Dyeing, and has by constant effort made the course of high recognized standing. It is one which prepares effectively a young man for almost any branch where a knowledge of Textile Chemistry

is required. This term includes that portion of applied chemistry which deals with the manufacture of dyestuffs and chemicals and their application to textile materials as well as the problems that arise out of the efficient and successful production of fabrics. These usually come from agencies that make difficulties, and produce obstructions, the elimination of which is aided by a knowledge of the laws of chemistry. Hence the need of a training in this subject for manufacturers is evident.

One other department of instruction that has already been referred to as entering into the complete training of a textile man, and one which perhaps includes the other departments, is engineering — engineering that is properly qualified by the prefix textile. The recognized value of certain accepted branches of engineering, viz., Steam, Electrical, Hydraulic, and Mill Engineering, to the textile manufacturer and the encouraging results obtained by teaching the principles of textile manufacturing from an engineering standpoint of applied science have been some of the reasons to justify the establishment of a Textile Engineering Department at the school.

Since the time when this department was first organized and a course by this name was offered, the distinct field of a textile engineer has become more and more properly recognized. There are a constantly increasing number of examples to show that the textile engineer is consulted as an expert in the solution of some perplexing problem of manufacturing, or in the proper arrangement of the plant to produce best results or the design of a power plant for economic operation. A step further will easily be taken and the present-day manufacturer will be recognized as an engineer in the same way that an electrical, mechanical or hydraulic engineer engaged in the manufacture of material or machines requires the same basic training as a consulting engineer. As many manufacturers, because of their work, may be classified as engineers, so many textile manufacturers may be classified as textile engineers. The latter includes the former and, therefore, his training should be the broadest possi-



Worsted Combing Section.

ble, for he should be familiar with all branches, not simply a single one, in the field of textile manufacturing. In proportion to his breadth of knowledge and experience do his services become of value.

This is what the course in Textile Engineering at the Lowell Textile School aims to do. Hence it is laid out on a four-year schedule that time may be had to give a broad and full course. The degree of Bachelor of Textile Engineering (B.T.E.) conferred upon completion is in full recognition by the State Board of Education that the grade of work required merits it. The success of the graduates from this course in a comparatively wide field of occupation has justified the belief concerning the need of such a course and the organization prepared to fulfil such a need.

The course is based upon the subjects of Mathematics, Mechanics, and Chemistry, and upon these are built the courses in Yarn Manufacturing, Weaving, Finishing, Dyeing, and the accepted departments of engineering known as Electrical, Steam, Hydraulic, and Mill. General courses of English, German, Industrial History, and Economics are taught entirely with an object to make them of practical, as well as cultural, value. During the fourth year the course in Business Administration serves to acquaint the student with some recognized business practices, including Business Law, Accounting, and the principles of Efficiency, which are found of value in promoting production and stimulating healthful social conditions. Through a course of this sort it is hoped that the graduate will be able to solve in an intelligent manner not only the manufacturing problems, but others that are so vitally connected with these that success or failure depends many times upon their satisfactory solution.

It has been the contention of the management of the school that any course of instruction which would help to produce a most competent textile manufacturer properly belonged to its curriculum, and that the completeness and standard of instruction should in no way be limited in its upward trend. The value of the textile industry to this country and state justifies sending only the very best men

into it. In proportion as this is done will the beneficial results to the nation be enhanced.

EVENING SCHOOL.

This institution was established to assist both those who intend to enter the textile industry and those who are already engaged in the industry. For the latter evening sessions offer the best opportunity, and since the commencement of the school this department of the work has been maintained. During the past twenty years the attendance in the evening classes has been a constantly increasing one, reaching over eight hundred during the last year. The courses offered have already been listed and the length of each course stated.

The methods of instruction are similar to those used in the day classes, but the work given and the manner of presentation must necessarily be adapted to meet the limited educational qualification of the students. By an examination the fitness of a student to pursue a course is determined, usually by a certificate showing that the student has completed a common school education. In the absence of this the student is subjected to an examination, usually written.

In some of the courses instruction is given by means of lectures, recitations, and laboratory work; in others only lecture work with problems and written tests, and in others machine work with explanations. In general it is found in the manufacturing courses that the student is familiar with the operation of the machine and comes to the classes that he may obtain the theory or methods of calculation involved in the work. The fact that written examinations are held at the completion of a year's work presupposes that the student understands the work sufficiently well, not only to serve his own use, but to instruct others. It is the desire that students go into the industry and become instructors, as well as operators, thus extending the field of the school's usefulness.

The courses of Woolen Spinning and Worsted Spinning cover, in the first year, instruction on the grades and varieties of wool, where grown, their recognized characteristics, and methods of scouring and carding. This is nearly all lecture

work, illustrated from time to time by machine operation and samples of stock. At the beginning of the second year students who wish to follow the course of Woolen Yarn are separated from those who select the Worsted Yarn course. The work in the first course is completed in this year and deals particularly with mule spinning, carding, and processes that are used in making this yarn. The instruction in Worsted Yarn manufacture deals with the Bradford Method of yarn manufacture during the second year and with the French Method in the third year. Practically all of the students select this course, as it covers the larger field.

For those who are engaged in cloth manufacturing during the day much valuable information is obtained through the three-year course in Designing, the one-year course in Finishing or the course in Weaving that is covered in one year. Each year there are examples of young men who are employed in the selling houses of Boston who journey to Lowell two or more nights per week during the session of the classes for the purpose of improving their position.

The courses in Elementary Chemistry assist those who are employed in the dyeing and finishing departments to secure the basic principles underlying their daily work, and to prepare them for the more advanced work in the later courses of Textile Chemistry and Dyeing. Some are employed as assistants in the chemist's laboratory of large textile plants where considerable analytical work is required. For these the course in Analytical Chemistry, or the combined course of Dyeing and Analytical Chemistry, helps in a very material way.

The subjects like Elements of Mechanism, Mechanical Drawing, and Machine Shop Practice are to give help to those engaged in the design, manufacture, and repair of textile machines. Improved production and efficiency depend upon well-designed machines as a factor. Correct designing can be had by a combined knowledge of processes and principles of mechanics. The courses of Steam and Electrical Engineering are to aid those employed in the power plants.

During the past year approximately 27 per cent of the evening students were from places outside of Lowell. Train accommodations are usually the determining factor, and if these were better, no doubt more students would be able to attend from places of greater distances from Lowell.

* The following information concerning the class of 101 that graduated in April of this year is both interesting and instructive:

Graduates from Lowell	51
" " outside of Lowell	50
Number of 1-year certificates	34
" " 2 " " 	33
" " 3 " " 	37

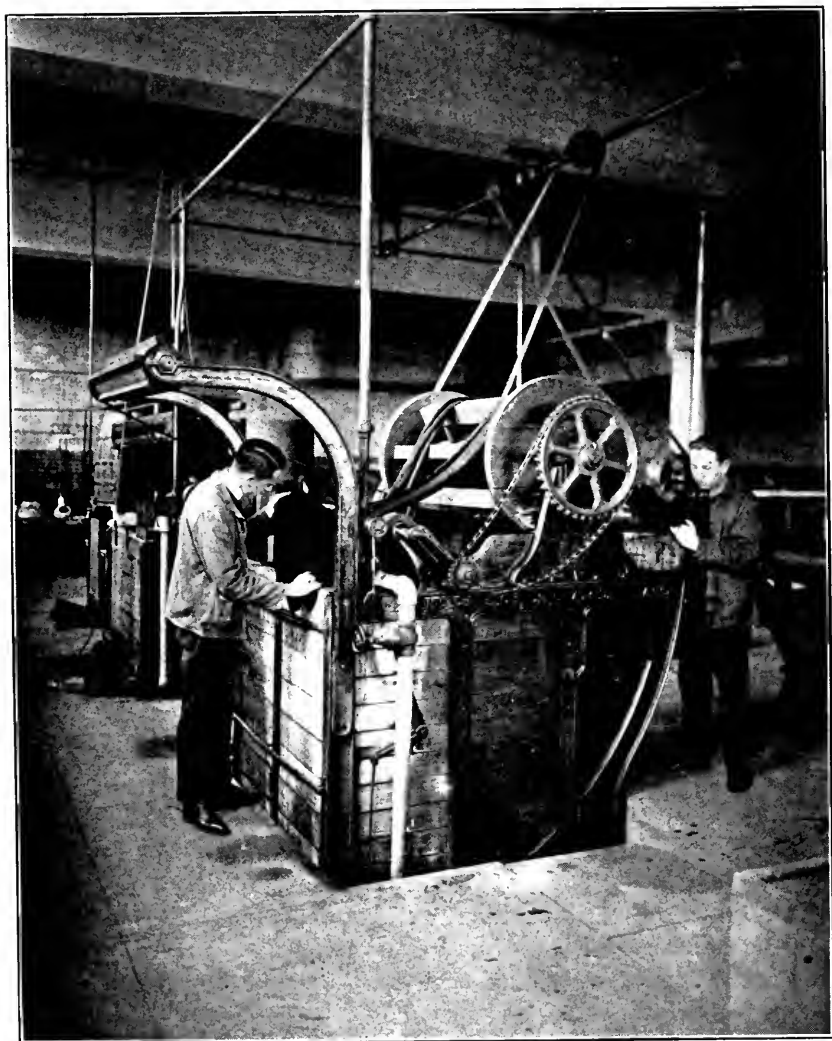
19 of these graduates have received certificates previously.

Particular attention should be called to the large proportion, approximately 70 per cent, who pursued courses of more than one year in duration, also to the number of graduates who have received certificates previous to this year. This last note indicates the endeavor to obtain as broad a course as possible, and not to confine one's activities to a limited field. This means more intelligent foremen and leaders in the textile industry.

EQUIPMENT.

To carry on the work described above four buildings forming four sides of a hollow square have been erected and these contain approximately 200,000 square feet of floor surface. Equipment valued at approximately \$283,000 is made up of standard machines as used in the mill. A number of machines are special, that the important principles of two standard machines may be shown at an initial expense less than the cost of two machines.

Briefly, the equipment of the wool yarn department consists in the scouring section of benches for sorting wool, a grease wool duster, a two-bowl scouring machine and apron



Piece Dyeing.

dryer. The woolen section consists of two sets of woolen cards and the same number of 120 spindle mules, together with mixing and burr pickers. In the worsted section besides a standard worsted card, Noble comb and gill boxes, there is a complete equipment of full-sized drawing, spinning, and twisting machines to make yarn according to the Bradford System. In a separate department is an equipment of thirteen machines to manufacture worsted yarn according to the French System and this includes a French comb and mule. The weaving of fabrics is done on regular power looms used in the manufacture of woolen and worsted fabrics and dress goods. Besides these are looms for weaving ingrain and Brussels carpets.

The finishing is accomplished in a separate department where machines to produce all of the standard finishes of woolen and worsted fabrics are arranged for serviceable operation and instruction. This department is near the dyeing department, so that the processes of the dyeing can be coördinated with that of the finishing.

In addition to the equipment which has been described above and which pertains to the manufacture of woolen and worsted fabrics, it should be kept in mind that the school equipment includes also standard machinery for manufacturing cotton fabrics from the bale to the finished goods, including picking, carding, drawing, spinning, weaving, designing, dyeing, and finishing. Instruction in Engineering is assisted very materially by the laboratories of steam and electrical engineering where there is arranged a small steam plant consisting of a small Corliss engine, surface condenser, turbine, electric generators and motors, apparatus for testing and experimenting, besides various types of pumps and apparatus for hydraulic experiments. Opposite these laboratories is a well-equipped machine shop, and in other parts of the buildings are drawing rooms where instruction is given in mechanical drawing and details of mill construction.

The Chemistry and Dyeing Department is well equipped for instruction in all branches of textile chemistry and the equipment is such as to assist in the instruction.

Through the extent of machinery, the arrangement of buildings, and the organization of equipment, the student is taught to see as a whole the inter-relationship of the various processes of manufacture, as well as to study the details of each.

It has come to be an accepted fact that this textile school is serving more effectually each year the needs of the textile industry. With the success of the graduates in their chosen lines come requests from industries not at first considered related to the textile, but which have come to appreciate the value of textile school trained men in their employ. The field, therefore, appears to widen almost without limit.

THE NEW PASSAIC COUNCIL.

REAL, PRACTICAL COÖPERATION IN THE WOOL MANUFACTURE—WORKING OF THE EMPLOYMENT BUREAU.

By J. FRANK ANDRES, Secretary-Treasurer.

ABOUT a year ago the idea that if a local association of mill owners having interests in common could be formed it would be a good thing for the individual members as well as for the community was conceived in Passaic. The prime importance of bringing about a mutual understanding on such questions as wages and working hours and an interchange of information on a multiplicity of other matters of general interest was patent because problems which had presented themselves for answer in the past had not been solved to the entire satisfaction of all concerned.

The success of similar organizations in other lines of industry was a convincing argument in favor of the plan, and the manufacturer to whom this thought came lost no time in placing the outline of his ideas before the other mill owners in the city. The interests which control the seven leading plants of Passaic realized that individual action in labor crises was often influenced by false or garbled second-hand reports as to what this mill or that mill intended doing, and that in this manner decisions were arrived at which were frequently harmful.

Following a number of meetings at which the subject was discussed thoroughly, the Industrial Council of Passaic Wool Manufacturers was formed with these members: The Botany Worsted Mills, Forstmann & Huffmann Company, Garfield Worsted Mills, Gera Mills, New Jersey Worsted Spinning Company, and Passaic Worsted Spinning Company.

The Constitution and By-Laws adopted read as follows:

CONSTITUTION.

ARTICLE 1.

The name of this organization is "The Industrial Council of Passaic Wool Manufacturers."

ARTICLE 2.

The objects of the Council are :

1. To promote and maintain friendly relations among the members by means of meetings and the free exchange of information concerning industrial conditions existing in the mills of the members.

2. To promote and maintain good-will between each member and its employees by the payment of fair wages and the establishment of such other industrial conditions as will tend to provide steady employment, ensure contentment, and develop a spirit of coöperation between the members and their employees.

3. To establish and maintain a central bureau of employment through whose agency each member can obtain competent workers and where a worker, without expense and loss of time, can obtain such a position as he is best able to fill, will pay him the highest wages and offer the best opportunity for advancement in view of his experience and his mental and physical qualifications. The bureau will keep in touch with the sources of labor supply and bring to the industry additional workers as the conditions of the business of the members require.

4. To collect and disseminate information relating to wages, hours of employment, holidays, and other factors in the manufacture of woollen products in the mills of the members and elsewhere, that each member may be in a position to act intelligently on such subjects and maintain conditions that are fair alike to employer and employee and protect the interests of both.

5. To standardize as far as possible ways and means of preventing accidents and improving conditions of sanitation, to the end that the mills of the members be safe and sanitary places of employment.

ARTICLE 3.

1. Any person, firm or corporation operating a mill engaged in the manufacture of woollen products at Passaic or vicinity, in the State of New Jersey, may become a member in the Council by election in the manner prescribed by its Constitution and By-Laws.

2. Each member shall appoint such persons as delegates as he may designate to attend the meetings of the Council with authority to act for and on behalf of such member.

ARTICLE 4.

The business of the Council shall be conducted by its officers and committees under the direction of the members, as herein prescribed.

ARTICLE 5.

1. The officers of the Council shall be a Chairman, a Vice-Chairman, and a Secretary-Treasurer elected from the delegates, and a Counsel. The incumbent of the office of Chairman shall not succeed himself in such office.

2. The Council shall create standing and temporary committees and determine the number of members thereof and confer upon such committees the powers necessary to accomplish the objects for which they shall have been created.

3. The Chairman, and, in his absence, the Vice-Chairman, shall appoint from the delegates the persons to serve on all committees.

ARTICLE 6.

1. The annual meeting of the Council shall be held on the second Monday of January at such time and place as the Chairman may appoint, for the election of officers and the transaction of such other business as may be regularly brought before it.

2. At any meeting each member who has paid all assessments and has complied with all the other provisions of the Constitution and By-Laws, and any rules and regulations made in pursuance thereof, shall be entitled to one vote and also to one additional vote if it employs 500 or more, but less than 1,000 workers; two additional votes if it employs 1,000 or more, but less than 2,000 workers; three additional votes if it employs 2,000 or more, but less than 4,000 workers, and four additional votes if it employs 4,000 or more workers.

3. All meetings, except the annual meeting, shall be held at such times and places as the Chairman may appoint. Special meetings shall be called by the Chairman at the request of at least two members, such request to be in writing addressed to the Chairman.

4. Members entitled collectively to at least sixty per cent of the total number of votes of the Council shall constitute a quorum for the transaction of business at any meeting of the Council.

ARTICLE 7.

1. At the annual meeting there shall be elected by ballot a Chairman, a Vice-Chairman, and a Secretary-Treasurer, to serve for the term of one year and until their successors are elected and have qualified.

2. The Council at its annual meeting shall appoint Counsel to serve for such time as it may determine.

3. In case a vacancy shall occur in an elective office, a new election, to fill such vacancy, shall be held at the next regular or special meeting.

ARTICLE 8.

This Constitution may be amended by two-thirds of the total number of votes of the Council, provided written notice containing a copy of the proposed amendments shall have been mailed to each member at least ten days before the date upon which the vote on the proposed amendments shall be taken.

BY-LAWS.

ARTICLE 1.

1. The Chairman shall preside at all meetings. He shall direct the enforcement of all adopted rules and have a general supervision over all the Council's interests.

2. Should special circumstances in his judgment so require, the Chairman may appoint committees, *ad interim*, to act until the regular appointments are made.

ARTICLE 2.

The Vice-Chairman shall perform all the duties of the Chairman during the latter's absence or inability to perform the same, or in case of a vacancy in the office of Chairman.

ARTICLE 3.

1. The Secretary-Treasurer shall have charge of all moneys of the Council and deposit the same in such bank as the Council may direct and shall make such disbursements for conducting its business as the Council may order.

2. He shall present to the Council at the annual meeting his reports, vouchers, books and papers which shall be referred to an auditing committee and, if found correct and approved, shall be so certified and reported.

3. He shall keep full and accurate records of the transactions of the Council. He shall conduct the correspondence and perform such other duties as the Council may prescribe.

4. The Counsel, on the request of any officer, committee or member shall advise as to any action to be taken concerning the Council and its work or the relations of the members to their employees.

ARTICLE 4.

The Council shall establish and maintain an Employment Bureau to provide its members with competent employees.

ARTICLE 5.

Each committee shall perform such duties as the Council, by resolution, shall prescribe.

ARTICLE 6.

1. Application for membership shall be in the following form:

"The undersigned hereby applies for membership in the Industrial Council of Passaic Wool Manufacturers, and agrees to be governed by and obey its Constitution and By-Laws and all rules made in conformity with the same, provided they do not conflict with the Constitution or laws of the United States or of the State of New Jersey."

2. A unanimous vote shall be necessary for the election of a member.

ARTICLE 7.

A manufacturer who is elected to membership after January 1, 1918, shall pay an initiation fee in such sum as the Council shall determine.

ARTICLE 8.

1. Each member shall mail to the Secretary-Treasurer, before the fifth day of January of each year, a report showing the average number of mill workers who have been employed during the preceding calendar year, but excluding office employees.

2. The Council, at its annual meeting, shall determine the sum necessary to defray the expenses of maintaining the Council during the current calendar year and shall levy upon

the members an assessment equal in amount to such sum of money, the quota of any member to be based upon the number of its employees during the preceding year as shown by its annual report.

3. The Council, from time to time as occasion requires, may levy additional assessments based upon the number of employees employed during the preceding year as shown by the last annual reports, the amount of such additional assessment to be determined by not less than seventy-five per cent of the total number of votes of the Council.

4. The Secretary-Treasurer shall notify each member of the amount of his assessment and such member shall pay the same to the Treasurer within ten days after the receipt by him of such notice.

ARTICLE 9.

A member may resign from the Council by presenting his resignation in writing to the Secretary who shall thereupon send to each member a notice of such resignation. If at the expiration of thirty days from the time when such resignation is received by the Secretary, no charges shall be pending against the said member, and he shall have paid all assessments and complied with all the provisions of the Constitution and By-Laws, and all the rules and regulations of the Council, his membership shall be terminated, provided, however, that a member shall not be permitted to resign during a strike or pending the adjustment of labor difficulties.

ARTICLE 10.

The Council shall have full power to suspend any member of the Council by a unanimous vote of remaining members; provided, however, that before suspending a member the Council shall inform him of the charges against him and give him an opportunity to be heard in his defence.

ARTICLE 11.

The order of business at any meeting of the Council shall be:

1. Roll Call.
2. Reading of Minutes.
3. Reports of Officers.
4. Reports of Committees.
5. Unfinished Business.
6. New Business.

ARTICLE 12.

These By-Laws may be amended in the same manner as provided by Article 8 of the Constitution, for amendments thereof.

Work was started almost immediately in equalizing the rates of wages for the various occupations in the mills. This was done with a view to reducing the labor turnover which, in notable instances, had become very large. Moreover, the flow of labor from one mill to another, because the pay for different classes of work was reported to be more remunerative, was a source of great annoyance to employers. Not only was this shifting costly to the mills, but it militated in no small degree against the workers becoming proficient operatives.

When an agreement on these questions was reached the next task of the Council was to organize an employment bureau through which all applicants for work in the mills were to be cleared. A large store was leased in a convenient section of the city. The Bureau was opened on March 1, 1917. From that time to the end of May the total number of applicants cleared was 8,395, of which 6,232 were men and 2,163 were women. The number actually hired by the mills during this period was 4,404, of which 2,744 were men and 1,660 were women. The cards issued to the applicants are good for one week and it is quite likely that a substantial number were still in circulation at the end of last month. An analysis of the Employment Bureau figures shows that the number of women employed by the mills increased steadily. In March, 504 women were employed; in April, 512; while in May the number of women hired totaled 644. This increase is considered gratifying when the great scarcity of women workers is taken into consideration. Out of the total number of applicants about 71 per cent were men and 29 per cent were women.

It is possible that the increase in the number of women applicants was due to the advance in wages given by the member mills of the Council in the month of May, and the

fact that the mills decided to purchase and distribute at wholesale prices commodities such as butter, flour, sugar, coffee, beans, rice, lentils, etc., in order to bring down the cost of living for their employees. Keen observers are of the opinion that from 15 to 20 per cent of the household expenses of the mill workers has been saved by this plan.

No applicant for work in any of the member mills can get in the mills without the card which is issued by the Employment Bureau. This plan has resulted in the mills procuring a desirable class of labor, for the statements made by every newcomer are investigated by employees of the Bureau. The inquiries made by the Bureau investigators frequently show that applicants have made false statements regarding their names, addresses, previous employers, reasons for leaving their former places of employment, or, if discharged, the reason therefor, etc. The Employment Bureau, in the opinion of the members, is an economic necessity because through it passes, after careful examination, the material from which the member mills choose their workers. It is no exaggeration to say that the Employment Bureau prevents, in no small measure, the ideas on which the Council is based from becoming nugatory.

So far the undertakings of the members are apparently working out satisfactorily, but as the Council is only in its infancy, it is impossible at this time to hazard an opinion regarding the ultimate outcome of the project.

A SUPPLY OF AUSTRALIAN WOOL.

EFFORTS OF MANUFACTURERS AND MERCHANTS MEET WITH SOME SUCCESS—BUT A STILL LARGER AMOUNT IS REQUIRED.

ON June 10 it was formally announced from Washington that the British Government had released 45,000 bales, or about 16,000,000 pounds, of Australian wool for immediate shipment to the United States. This was the word from the Department of Commerce which, through its Bureau of Foreign and Domestic Commerce, headed by Dr. E. E. Pratt, had particularly interested itself in securing this indispensable raw material for American manufacturing. Thus was rewarded with success so far as it went a movement initiated months before by the wool manufacturers and merchants of the country to secure some definite quantity of Australian wool, on which an embargo had been laid in November, 1916. The entire Australian wool clip at that time was commanded by the British Government.

In order to urge the need of a lifting of the embargo and a reasonable supply of wool from Australian sources, a special committee was appointed consisting, for the National Association of Wool Manufacturers, of Messrs. Franklin W. Hobbs, president of the Arlington Mills, Vaughan Jealous of the American Woolen Company, and Joseph R. Grundy of William H. Grundy Company, Inc.; for the American Association of Woolen and Worsted Manufacturers, of Messrs. Charles H. Wilson of James & E. H. Wilson, Spaulding Bartlett, treasurer of S. Slater & Sons, Inc., and Robert T. Francis of the Pontoosuc Woolen Manufacturing Company; for the Boston Wool Trade Association, of Messrs. William E. Jones of Hallowell, Jones & Donald, William R. Cordingley of Cordingley & Company, Inc., and Arthur E. Gill of Dewey, Gould & Company; and for the Philadelphia Wool and Textile Association, of Messrs. Charles H. Hard-

ing of the Erben-Harding Company, Charles Bateman of Philadelphia, and Charles J. Webb of C. J. Webb & Company.

This committee, together with Mr. A. M. Patterson, president of the Textile Alliance, Inc., proceeded to Washington and held conferences with Dr. E. E. Pratt, the chief of the Bureau of Foreign and Domestic Commerce of the Department of Commerce, and with Mr. Pierce C. Williams, commercial attaché at London. A formal statement of the probable consumption and needs of the wool manufacture of the United States for the year 1917 was prepared and presented to the officials of the Bureau for the information of British representatives with whom they were conferring. One of the memoranda thus presented was as follows:

While the wool consumption of the United States has normally been increasing, the domestic production of wool has been decreasing, as follows:

AMERICAN PRODUCTION OF RAW WOOL.

Fiscal Year.	Production (Pounds).
1909-10	328,110,749
1910-11	321,362,750
1911-12	318,547,900
1912-13	304,043,400
1913-14	296,175,300
1914-15	290,192,000
1915-16	288,777,000
1916-17	288,498,600

More and more the United States has come to depend upon foreign wools, of which the total importations in the fiscal years 1909-10 to 1915-16 were as follows:

AMERICAN IMPORTATION OF RAW WOOL.

Fiscal Year.	Total Imports (Pounds).
1909-10	263,928,232
1910-11	137,647,641
1911-12	193,400,713
1912-13	195,293,255
1913-14	247,648,869
1914-15	308,083,429
1915-16	534,828,022

Nearly all of our importations of wool enter the three great ports of Boston, New York, and Philadelphia, adjacent to the chief manufacturing districts. The gross imports at these three ports in the fiscal year ending June 30, 1916, were 448,494,434 pounds, of which 23,326,562 pounds were produced in the United Kingdom, 11,477,709 pounds in the British East Indies, 122,361,839 pounds in British Oceania (including Australia), and 78,430,380 pounds in British South Africa. That is to say, out of total importations at the three great American ports of 448,494,434 pounds in the last complete fiscal year, no less than 235,596,490 pounds came from British territory.

In the year 1915-16 the total amount of wool retained for consumption in the United States was 821,801,452 pounds, of which 534,828,022 pounds were imported. The United States will require fully as much wool in 1916-17 as it had available for consumption in 1915-16. The quarterly reports of the National Association of Wool Manufacturers show that more woollen machinery is in operation this year than was in operation in the year preceding.

To the normal civilian demands of the American people for woollen fabrics have now been added the demands of an army estimated at the beginning at one million men. These troops will require, it is estimated, 120,000,000 pounds of wool for clothing purposes in a twelve months' period. In view of the very much greater needs of the soldier for woollen equipment as compared with the same man as a civilian, the army demands will mean an addition of nearly or quite 100,000,000 pounds to the total wool requirements of the United States. That is to say, instead of approximately 821,000,000 pounds, as in the year preceding, the United States should have this year approximately 900,000,000 pounds of wool, of which the American production will furnish not more than 288,000,000 pounds.

Unless a considerable supply of wool from Australasia, South Africa, and other British Dominions is quickly guaranteed, there will inevitably be a grave wool famine in America by the autumn or winter of the present year. Our imports of wool from South America in the fiscal year 1916 at Boston, New York, and Philadelphia were 158,014,399 pounds. This importation represents approximately all which South America can yield to the United States in the present year. Unless a supply of wool equal to the preceding year's imports can be secured from Australasia and from other British possessions, the new army of the United States

can be clothed only by depriving the American people in large part of woolen fabrics which they need and to which they have been accustomed.

This and other representations that were laid before the members of the British Commission visiting Washington, and statements made in consequence with the British governmental authorities in London, seem to have been in a way sufficient for their purpose, but the amount of wool thus far released is not regarded as adequate for American demands, and the allotment of a larger quantity is being requested.

Now that the United States is a very active and generous ally of Great Britain and her Allies in the world-war, it is felt by American manufacturers and merchants that to grant an increased amount of wool from the large stores accumulating in Australia is a simple and natural matter of good-will. The Australian wool sought is not of a grade adaptable, as a whole, to the production of army fabrics, though some of these wools might enter into the finer blue cloth of the accustomed uniforms of the Navy and Marine Corps. It is the understanding now that the wool released and that which it is hoped may follow it will be shipped in tonnage, secured if possible by the United States Government, to ports of the Pacific coast or through the Panama Canal to the Atlantic coast, and that it will be offered with a certain upset price at public auction at Boston, under the auspices of the Textile Alliance, Inc.

ACTIVE AND IDLE MACHINERY.

WAR ORDERS FOR THE UNITED STATES GOVERNMENT
BEGIN TO APPEAR.

For the first time in the quarterly canvass of active and unemployed wool machinery undertaken by the National Association of Wool Manufacturers army and navy orders for the government appeared June 1, 1917, in considerable numbers. This work will steadily increase throughout the summer and, to give a fairer measure of the proportion of American wool manufacturing machinery so employed, a special canvass of the industry for July 2, and monthly thereafter for a while, is being undertaken.

An unavoidable delay in publishing this Bulletin makes it possible to include with the June statement of machinery the similar statement for July. The following table, therefore, contains the statement for each of the two months, and in addition a tabular statement of the percentage of idle wool manufacturing machinery in the United States, as reported in each quarterly inquiry, beginning with December 1, 1913, when this effort to apprise our manufacturers of the condition of the industry was commenced.

It must be understood, as has frequently been remarked, that these reports show the condition of the industry in the mills reporting, which represent a very large proportion of the machinery capacity of the country, and indicate very clearly the relative state of non-employment through the country at the several dates.

After our March canvass the Government began to place orders for supplies for our military forces, and in June we made request that the mills report their machinery employed on this work. The replies indicated that while a number of establishments were then busily engaged in supplying these needs, many others were preparing for the undertaking and

ACTIVE AND IDLE MACHINERY IN THE WOOL MANUFACTURE, JUNE 1 AND JULY 2, 1917; WITH STATEMENT OF PERCENTAGES OF IDLE TO TOTAL AS REPORTED SINCE DECEMBER 1, 1913.

	Looms.			Sets Woolen Cards.	Worsted Combs.	Spinning Spindles.	
	Wider than 50 inch Reed Space.	Under 50 inch Reed Space.	Carpets and Rugs.			Woolen.	Worsted.
Machinery Reported as of June 1, 1917.							
Idle.	5,636	1,461	657	200	234	59,393	292,606
In Operation . .	37,308	11,397	3,051	3,378	1,612	1,127,835	1,468,674
Total	42,944	12,858	3,708	3,578	1,846	1,187,228	1,761,279

Machinery Reported as of July 2, 1917.							
Idle.	6,082	1,568	624	194	173	78,129	312,066
In Operation . .	33,991	12,694	2,615	3,229	1,415	1,068,336	1,317,019
Total	40,073	14,262	3,239	3,423	1,588	1,146,465	1,629,085

DATE.	Looms.			Sets Woolen Cards.	Worsted Combs.	Spinning Spindles.	
	Wider than 50 inch Reed Space.	Under 50 inch Reed Space.	Carpets and Rugs.			Woolen.	Worsted.
Per Cent of Idle Machinery to Total Reported.							
Dec. 1, 1913 . .	24.9	27.2	32.1	21.4	23.1	22.7	26.
March 2, 1914 . .	24.8	17.7	24.5	19.5	13.	22.2	22.
June 1, " . .	24.6	25.	28.3	19.4	15.5	25.8	18.1
Sept. 1, " . .	26.	17.3	38.3	22.8	21.	22.5	16.9
Dec. 1, " . .	27.7	30.	48.9	30.	41.3	31.6	33.
March 1, 1915 . .	32.7	32.	45.8	22.7	29.4	21.5	33.
June 1, " . .	30.4	25.9	24.5	17.7	30.	17.4	39.6
Sept. 1, " . .	26.7	31.2	24.	15.5	14.	14.2	17.
Dec. 1, " . .	16.8	20.2	19.6	8.8	14.2	8.6	15.6
March 1, 1916 . .	12.1	7.7	17.1	7.3	7.9	9.3	7.9
June 1, " . .	13.9	6.7	17.6	12.7	10.	9.8	11.
Sept. 1, " . .	18.	10.6	26.	10.9	12.9	13.3	10.8
Dec. 1, " . .	12.8	9.4	19.7	8.3	9.2	7.8	9.7
March 1, 1917 . .	13.4	7.9	16.1	6.2	8.1	6.7	11.8
June 1, " . .	10.3	11.3	17.7	5.6	12.9	5.	10.9
July 2, " . .	15.2	11.	19.3	5.6	10.9	6.8	19.1

Machinery Employed on Domestic War Orders.							
June 1, 1917 . .	5,696	217	. . . .	517	231	157,953	210,366
July 2, 1917 . .	8,249	1,219	. . . .	958	274	306,343	274,944

Machinery Employed on Foreign Military Orders.							
March 1, 1915 . .	1,106	10	. . . .	250	17	81,941	7,436
June 1, " . .	1,535	3	. . . .	296	. . . .	113,067	. . . .
Sept. 1, " . .	2,248	40	. . . .	547	2	150,185	6,700
Dec. 1, " . .	1,846	14	. . . .	529	. . . .	167,513	480
March 1, 1916 . .	648	. . . .	. . . .	108	. . . .	39,438	. . . .

would soon have many spindles and looms so employed. The inquiry was repeated in July and the returns show a great increase in this class of employment, while at the same time many reports stated that the mills would soon be at work supplying the Government's needs. The relative amount of employment on this class of work is shown in a section of the statement.

The table also includes a recapitulation of the reports, indicating the machinery employed at various dates on military work for foreign nations, a class of employment which practically ceased early in 1916. From neither of the statements can any clue be obtained as to the amount of export business being done in the wool manufacture. The only source of information on this point is the reports on Foreign Commerce, of which the latest available is that for April, 1917, from which it appears that in the ten months ending April 30, 1916 and 1917, our exports of wool manufactures of domestic origin amounted to \$46,354,629 and \$14,006,300, respectively. These figures include the exports of wearing apparel, but not those of woolen rags.

Book Review.

WOOL, THE RAW MATERIALS OF THE WOOLEN AND WORSTED INDUSTRIES.

By STANLEY H. HART.

A VALUABLE contribution to the literature of the wool business has recently been made by the publication of a book by Mr. Stanley H. Hart, lecturer on raw materials at the Philadelphia Textile School. This work has been edited by Dr. Edward W. France, Director of the School, and contains a mass of information relating to the production, preparation for market, and marketing of wool, as well as to the origin of various breeds of sheep, their listing, the percentages of their wool, and its adaptability to the manufacture of different classes of fabrics. The text is profusely illustrated, and thus much is added to the value of the work, although there are a few points in which the writer seems to have been misled. The writer evidently has consulted the best recent authorities on his subject, and has produced a work which certainly justifies his hope that "the book may prove useful to laymen seeking knowledge of the raw materials of the woollen and worsted industries, and that it may also be of value as a reference book in educational institutions conducting textile, agricultural, commercial, industrial, and domestic art courses." The book can be obtained of Dr. France at the Philadelphia Textile School.

Editorial and Industrial Miscellany.

TRAINED BRAINS IN THE TEXTILE ARTS.

THE STORY OF THE LOWELL SCHOOL—ONE MORE OF THE INSTITUTIONS OF SO MUCH PROMISE FOR AMERICA.

A CLEAR and admirable description, not merely of the mechanical plant, but of what is still more important, of the scope of instruction, the purposes and the ideas of the Lowell Textile School, is published in the first leading article of this Bulletin by the accomplished principal of the institution, Charles H. Eames, S.B. The Lowell Textile School is an institution regarded with justifiable pride in Massachusetts. It has a fine location in the great Lowell-Lawrence district, on the Merrimac, one of the historic world-seats of the textile industry. The school was started in a spirit of appreciation of the importance of the textile arts to New England and particularly to the Bay State. Massachusetts law-makers have been reasonably generous to the institution, and its growth has been a notable one. In this school the wool manufacture holds a prominent part and the wool branch and the cotton branch have adequate representation side by side.

So thorough and broad has been the work performed at Lowell, that the Legislature of Massachusetts, on the recommendation of the State Board of Education, has authorized the trustees of the school to confer degrees, so that, as Principal Eames well says, the school takes rank "in the category of higher and degree-granting institutions"—thus fitly recognizing the criterion which this school has championed, "that the character, grade and breadth of specific and technical training for those who are to enter the textile industry should be equal in standing to that required for young men entering professional life."

Thus side by side at Lowell with the strictly technical work goes on the pursuit of such cognate arts as chemistry, mechanism, mechanical drawing, physics, mathematics, history, English, either French or German, steam and electrical engineering. A graduate of a textile school like that of Lowell may properly be

considered a well-rounded man, liberally educated, and thoroughly grounded in the theory and practice of the textile art — awaiting only a wider actual mill experience to qualify him for a high place in manufacturing.

This actual mill experience is by no means to be despised — for no more in the textile industry than in anything else is there a royal road to complete knowledge and efficiency. Those graduates of the Lowell school, like graduates of similar schools, are wise who accept their diplomas as marking a half-way stage in professional education. A mill awaits them, and there they are to put their scholastic training to the test of practical application. It speaks well for the spirit of the Lowell graduates that so many succeed, and so few fail in a difficult and exacting business. There is a place, and a great place, in the textile industries of the country for cultivated brains. All honor to the faithful men who at Lowell and elsewhere make it their duty to supply them.

FOR EMPLOYER AND EMPLOYEE ALIKE.

THE PASSAIC COUNCIL AND ITS ORGANIZED EFFORT IN GOOD-WILL.

IN other pages of the Bulletin there appears an interesting account of the plan and work of the new Industrial Council of Passaic Wool Manufacturers, which has brought a wonderful spirit of frank coöperation into being in one of the most important wool manufacturing centers of the United States. Before this organization was formed the Passaic wool manufacturers were moving, in many ways, at cross purposes, and labor conditions in the city were by no means what they ought to be. There was suspicion, unrest, and a lack of confidence in the future, and many of the work-people, not yet familiar with the language and the customs of the new land, were disposed to be too easy victims of grafting agitators.

Though the new Council has been but a few months in existence it has brought a wonderful change, and its beneficent results have been experienced alike by employees and by employers. The Council, of course, is an employers' association, but one of the chief aims of its promoters is to secure better conditions for

the work-people themselves. Already much has been achieved toward making employment more stable and permanent, and the workers who stay on their jobs are the ones who are most likely to be gaining in efficiency. One new progressive development of the work of the Council is the distribution, at moderate prices, of many necessary articles of food in order to bring down the cost of living — something which is especially appreciated by the wage-earners.

Though the Passaic Council is still young, it has become a living force in the city of its origin, and its progressive spirit and the sagacity of the policies which it has pursued are highly creditable to Chairman Forstmann and his colleagues. These busy men of affairs are giving generously of their time and thought to this plan of real, broad coöperation. Their meetings are frequent; they study every problem with characteristic thoroughness. They are successfully working an experiment which before long will cease to be a mere experiment, and meanwhile is full of encouragement and interest to textile manufacturers elsewhere.

Though active rivals and competitors in business the Passaic manufacturers have found that there are many things in which they have a common interest, many things which can rightfully be done to promote the common welfare. As always happens, the relations of business men who meet in a frank spirit become more and more harmonious. No longer strangers to each other, they are no longer subject to many of the misunderstandings which are so frequently the plague of every trade. The success thus far recorded is all the more gratifying because Passaic, like other large manufacturing centers, contains men of marked individuality, as well as of very great ability in executive and technical affairs. Undue aloofness, undue secretiveness, have harmed the textile industry in the past as they have harmed other industries in which competition is severe and constant. Frequent meetings and honest interchange of views among capable and upright men lead always to a lessening of prejudice and the growth of a spirit of true comradeship. The Passaic Council and the vigor and wisdom with which it is controlled are winning for the city a still more honored place in the records of the wool manufacture of America.

THE CROMPTON & KNOWLES LOOM WORKS.

CHARLES HENRY HUTCHINS. LUCIUS J. KNOWLES.

IN the early part of the last century Mr. Samuel Lawrence, at that time treasurer of the Middlesex Mills of Lowell, Mass., came into possession of a piece of fancy cassimere made upon a hand loom in France. Mr. William Crompton, an Englishman living in Taunton, had recently invented a loom for the manufacture of a class of cotton goods. At Mr. Lawrence's suggestion, Mr. Crompton undertook to adapt his loom to the production of similar goods and after a long series of experiments he finally succeeded. Up to this time, Mr. Lawrence writes, "not a yard of fancy woolen fabrics had ever been woven by power-loom in any country till done by William Crompton at the Middlesex Mills, Lowell, Mass., in 1840."

The first piece of cloth so woven was for many years on exhibition at the office of the Crompton & Knowles Loom Works in Worcester.

Mr. George Crompton, son of William Crompton, in 1849 succeeded to his father's business, and proceeded to manufacture the Crompton loom at Worcester, in Massachusetts, on what is known as the close shed principle. In later years it was so improved by his experience and inventive genius that the original loom was hardly recognizable, though the principle was maintained.

In 1847 Mr. Lucius J. Knowles, who was much interested in mechanical questions, and had invented various successful machines, established a mill for the manufacture of cotton warps, which he later removed to Warren, Mass. While engaged in the manufacture of satinets from 1855 to 1858, he made various improvements on the looms he was then running, and in 1857 constructed a drop-box mechanism for operating the drop boxes of the loom. This was the beginning of the fancy loom as built by the Knowles Loom Works.

Later, Mr. Lucius J. Knowles, with his brother, F. B. Knowles, under the firm name of L. J. Knowles & Brother, began manufacturing looms in 1862 for hoop-skirts with woven pockets for the wires and binding tapes, etc.

In 1866 the company moved to Worcester and began the manufacture of cam looms for satinets, doeskins, and similar goods.

The business grew rapidly, and after the death of Mr. L. J. Knowles in 1884 it was continued under the name of the Knowles Loom Works.

Their looms were built upon what is known as the open shed principle, and for many years it was a question which was the better loom for general manufacturing purposes.

In 1897, in the natural course of events, the two establishments, the Crompton Loom Works and the Knowles Loom Works, merged into one corporation under the name of the Crompton & Knowles Loom Works, of which Mr. Charles Henry Hutchins, who was born in East Douglas, Mass., in 1847, became president. This office he continued to hold until the present year.

The "New York Carpet and Upholstery Trade Review" says of him:

Before his connection with the Crompton & Knowles Loom Works he was with a dry goods house in Worcester for seven years, resigning this position to engage in the manufacture of tape and webbing as head of the firm of C. H. Hutchins & Co. In 1884 he accepted the office of treasurer of L. J. Knowles & Bro., manufacturer of looms, and in 1890 he was elected president and treasurer of the Knowles Loom Works. In 1897 this corporation and the Crompton Loom Works were consolidated under the title of the Crompton & Knowles Loom Works, with Mr. Hutchins as president, an office he has held from that time until his recent resignation. He is also president of the United States Envelope Company, vice-president of the Peoples Savings Bank, and is director in the Booth Manufacturing Company, the Judson Mills, and in the Worcester Trust Company. He is a member of the following clubs of Worcester: The Tatnuck, Country, the Worcester, the Quinsigamond Boat, the Worcester Country, and of the Worcester Chamber of Commerce, also of the Home Market Club, Boston, and the Union League Club of New York City.

Mr. Hutchins will retain an interest in the affairs of the corporation, although it is understood that he will not take an active part in its management. His firm has for many years been a member of the National Association of Wool Manufacturers, in which Mr. Hutchins has frequently served on various committees.

Mr. Lucius J. Knowles, who succeeds Mr. Hutchins in the presidency of the Crompton & Knowles Loom Works, is the son of Francis B. Knowles, the brother of Lucius J. Knowles, the

founder of the Knowles Loom Works. He is also a director in numerous large corporations and industries of Worcester. His connection with the Crompton & Knowles Loom Works began in 1903, and in 1906 he became its treasurer, and its vice-president in 1907.

He is a director of the Merchants National Bank of Worcester, and is connected with a number of other business and social organizations. Under his management there is no doubt that the influence and prosperity of the Crompton & Knowles Loom Works will be continued. The corporation's principal place of business is in Worcester, Mass., but it has branch establishments in Providence, R.I., Philadelphia, Pa., and Charlotte, N.C.

ARMY AND NAVY CLOTHS.

GRATIFYING PROGRESS IN THE WORK OF THE COMMITTEE COÖPERATING WITH THE GOVERNMENT.

How the work began of the joint committee of wool manufacturers coöperating with the Government, and how closely this committee, headed by Colonel John P. Wood, President of the National Association of Wool Manufacturers, has collaborated with the Committee on Supplies of the Advisory Commission of the Council of National Defense, was related up to April last in the quarterly Bulletin of the National Association for April, 1917. Since that time this work has been steadily continued. Frequent meetings of the committee have been held, and Colonel Wood, the chairman, has passed a great deal of time in Washington in direct conference with officials concerned. The aim of the committee has been to secure the fullest possible measure of service on the part of the industry, and this effort, it is believed, has been successful to a marked degree. The activity of the committee has been greatly appreciated by representatives of the War and Navy Departments. Revised specifications and samples have been made widely available to the trade at the offices of the American Association of Woolen and Worsted Manufacturers and of the Woolen Goods Exchange in New York City. At this writing the work is going actively on.

EIGHT HOURS FOR YOUNG WORKERS.

THE NEW FEDERAL LAW OPERATIVE SEPTEMBER 1—HOW THE SYSTEM HAS WORKED IN MASSACHUSETTS.

ON September 1 next there goes into effect throughout the country the child labor law of the Sixty-fourth Congress. It invokes the power of Congressional control over interstate commerce to forbid the transportation in interstate or foreign trade of articles the product of mills, workshops, or factories in which boys and girls under the age of fourteen years have been employed. This legislation, it is commonly understood, was aimed particularly at the cotton mills of Southern States where long hours of labor were permitted. But it is sweeping in its application, covering not only mills but mines, quarries, canneries, workshops, and, indeed, manufacturing establishments of all kinds. With characteristic tender political consideration for the potentialities of the agricultural vote, the farms of the country are excepted. Tens and hundreds of thousands of farmers' children, except in their brief periods of schooling, toil from sun to sun.

In Massachusetts, Pennsylvania, and other Northern manufacturing States where eight-hour laws in one form or another have been in operation, the new Federal measure will cause no substantial change. But in other manufacturing communities, North, South, and West, it will be different. We present, therefore, the full text of the new Federal law, as follows:

AN ACT To prevent interstate commerce in the products of child labor, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That no producer, manufacturer, or dealer shall ship or deliver for shipment in interstate or foreign commerce any article or commodity the product of any mine or quarry, situated in the United States, in which within thirty days prior to the time of the removal of such product therefrom children under the age of sixteen years have been employed or permitted to work, or any article or commodity the product of any mill, cannery, workshop, factory, or manufacturing establishment, situated in the United States, in which within thirty days prior to the removal of such product therefrom children under the age of fourteen years have been employed or permitted to work, or children between the ages of fourteen years and sixteen years have been employed or permitted to work more

than eight hours in any day, or more than six days in any week, or after the hour of seven o'clock post meridian, or before the hour of six o'clock ante meridian: *Provided*, That a prosecution and conviction of a defendant for the shipment or delivery for shipment of any article or commodity under the conditions herein prohibited shall be a bar to any further prosecution against the same defendant for shipments or deliveries for shipment of any such article or commodity before the beginning of said prosecution.

SEC. 2. That the Attorney General, the Secretary of Commerce, and the Secretary of Labor shall constitute a board to make and publish from time to time uniform rules and regulations for carrying out the provisions of this Act.

SEC. 3. That for the purpose of securing proper enforcement of this Act the Secretary of Labor, or any person duly authorized by him, shall have authority to enter and inspect at any time mines, quarries, mills, canneries, workshops, factories, manufacturing establishments, and other places in which goods are produced or held for interstate commerce; and the Secretary of Labor shall have authority to employ such assistance for the purposes of this Act as may from time to time be authorized by appropriation or other law.

SEC. 4. That it shall be the duty of each district attorney to whom the Secretary of Labor shall report any violation of this Act, or to whom any State factory or mining or quarry inspector, commissioner of labor, State medical inspector, or school-attendance officer, or any other person shall present satisfactory evidence of any such violation to cause appropriate proceedings to be commenced and prosecuted in the proper courts of the United States without delay for the enforcement of the penalties in such cases herein provided: *Provided*, That nothing in this Act shall be construed to apply to bona fide boys' and girls' canning clubs recognized by the Agricultural Department of the several States and of the United States.

SEC. 5. That any person who violates any of the provisions of section one of this Act, or who refuses or obstructs entry or inspection authorized by section three of this Act, shall for each offense prior to the first conviction of such person under the provisions of this Act, be punished by a fine of not more than \$200, and shall for each offense subsequent to such conviction be punished by a fine of not more than \$1,000, nor less than \$100, or by imprisonment for not more than three months, or by both such fine and imprisonment, in the discretion of the court; *Provided*, That no dealer shall be prosecuted under the provisions of this Act for a shipment, delivery for shipment, or transportation who establishes a guaranty issued by the person by whom the goods shipped or delivered for shipment or transportation were manufactured or produced, resident

in the United States, to the effect that such goods were produced or manufactured in a mine or quarry in which within thirty days prior to their removal therefrom no children under the age of sixteen years were employed or permitted to work, or in a mill, cannery, workshop, factory, or manufacturing establishment, in which within thirty days prior to the removal of such goods therefrom no children under the age of fourteen years were employed or permitted to work, nor children between the ages of fourteen years and sixteen years employed or permitted to work more than eight hours in any day or more than six days in any week or after the hour of seven o'clock post meridian or before the hour of six o'clock ante meridian; and in such event if the guaranty contains any false statement of a material fact, the guaranty shall be amenable to prosecution and to the fine or imprisonment provided by this section for violation of the provisions of this Act. Said guaranty, to afford the protection above provided, shall contain the name and address of the person giving the same: *And provided further*, That no producer, manufacturer, or dealer shall be prosecuted under this Act for the shipment, delivery for shipment, or transportation of a product of any mine, quarry, mill, cannery, workshop, factory, or manufacturing establishment, if the only employment therein, within thirty days prior to the removal of such product therefrom of a child under the age of sixteen years has been that of a child as to whom the producer or manufacturer has in good faith procured, at the time of employing such child, and has since in good faith relied upon and kept on file a certificate, issued in such form, under such conditions and, by such persons as may be prescribed by the board, showing the child to be of such an age that the shipment, delivery for shipment, or transportation was not prohibited by this Act. Any person who knowingly makes a false statement or presents false evidence in or in relation to any such certificate or application therefor shall be amenable to prosecution and to the fine or imprisonment provided by this section for violations of this Act. In any State designated by the board, an employment certificate or other similar paper as to the age of the child, issued under the laws of that State and not inconsistent with the provisions of this Act, shall have the same force and effect as a certificate herein provided for.

SEC. 6. That the word "person" as used in this Act shall be construed to include any individual or corporation or the members of any partnership or other unincorporated association. The term "ship or deliver for shipment in interstate or foreign commerce" as used in this Act means to transport or to ship or deliver for shipment from any State or Territory or the District of Columbia to or through any other State or Territory or the District of Columbia or to any foreign country; and in the case of a dealer means only to transport or to ship or

deliver for shipment from the State, Territory, or district of manufacture or production.

SEC. 7. That this Act shall take effect from and after one year from the date of its passage.

Approved, September 1, 1916.

In this connection some notes of the experiences which Massachusetts wool manufacturers have had with the eight-hour law as applicable to boys and girls from fourteen to sixteen in their own State may be interesting. The president of one large corporation states:

We have about 250 to 300 employees under sixteen years of age, who come in late and go out early in order not to work over eight hours per day. They are mostly helpers in the spinning room. We started out with the idea that we would not employ any such operatives, but after a while decided that it would be better to do this as many of them are just under sixteen, and after a short period of training they are qualified to become spinners and are gradually worked into the mill, and if we waited until after they were sixteen they would get started in some other business and might not come into the mill at all.

This is not an uncommon judgment among Massachusetts manufacturers. Though the new law has proved inconvenient, they regard it as advantageous to take boys and girls below sixteen because at that age they appear to learn more quickly.

Another Massachusetts manufacturer says:

After the passage of the eight-hour labor law by the State of Massachusetts, which applied to employees under sixteen years of age, for a time we ran our mills without such children, having decided that it was better not to employ them at all. We should still be of the same mind if we could get help over sixteen years of age in sufficient numbers to run our mills. However, the shortage of help which began in 1915 made it seem necessary for some of the mills in this vicinity to arrange to employ the children in some departments. We began later to take them into the spinning room, and in some of the other and lighter operations.

This corporation starts work in the spinning room at the usual hour for starting the mill — namely, 6.45 A.M. — and continues to employ the boys and girls below sixteen until 3.45 P.M., with an hour off for dinner, for five days a week. On Saturday

the boys and girls work $5\frac{1}{2}$ hours only, making a week of $45\frac{1}{2}$ hours. "They are paid for only the number of hours they work, and the rate per hour is not made greater because of the fact that their services are not worth so much as they would be if they worked the full scheduled time. When they go out at 3.45 P.M., which is their time for stopping, their work is carried on by roving men, oiler boys, scrubbers, section men, and any other spare help in the room that can be withdrawn from other work. This, in a measure, minimizes the importance of the work of the roving men, etc., by instilling a feeling that whatever they are doing is of so little importance that they can be withdrawn to fill the gap in spinning, doffing, etc. It is a disagreeable thing at best to provide for a portion of our workers a shorter working day and week than our time-table calls for, but, on the other hand, we get along fairly well with the plan outlined above."

This eight-hour restriction is significantly not popular with the parents and with the boys and girls themselves, for "the minors and their families feel that the eight-hour law for them is a hardship. We feel that the child under sixteen years of age is deprived during the best part of his life of a manual training that will fit him later on to be a good spinner, weaver, etc. In this respect we wish that some arrangement could be made to give the boy or girl something like half-time work and an idea of what work is. But here again we are confronted with the shortage of help and the exorbitant wage which the child demands, and it seems at present impossible to get them without paying more than a half-timer is worth."

One mill agent, an acute observer of very great experience, replies in answer to an inquiry that practically the boys and girls in his establishment "work only 45 hours a week, as they work five days at 8 hours and $5\frac{1}{2}$ hours on Saturday." Their going in and coming out, he adds, "causes us a great deal of trouble, and if we could possibly get along without these boys and girls we certainly should do so. When they get to be fourteen years of age they are not as quick to learn as formerly, and at the age of sixteen many of them are too lazy to work at all."

Still another agent at the head of a great mill states:

When this State law went into effect we felt that we were doing a charitable act in continuing to hire boys and girls under

sixteen years of age. We do get some benefit from the eight-hour day, but the arrangement is not at all satisfactory and causes us no end of inconvenience. More attention is required. There is a loss in production. They all want the shift from 6.45 to 3.45. They are in and out all day. There is a loss to the family as well as to the mill, and the boys and girls themselves are better off working full time. In the French system the boys will go out in the afternoon and their cleaning will not be done, and we have to pay the men running the mules the boys' wages. If we could work the minors 48 hours a week on our own schedule it would be quite a help to us; as it now stands the minors are only allowed to work $45\frac{1}{4}$ hours a week.

There are aspects of this short-day problem for youthful workers which have not been realized by those persons without practical manufacturing experience who have urged the new legislation in Washington and the State capitals. But law is law, and manufacturers will in good faith comply with it, though in this war-time scarcity of help of all kinds, the cost of accommodating machinery and organization to the change will be even severer than has been anticipated.

SHEEP OR DOGS?

A WIDE MOVEMENT TO PROTECT THE ANIMALS OF THE GREATER USE TO HUMANITY.

ONE feature of the "More Sheep and More Wool" campaign that has been attracting increased attention this year throughout the country is the eagerness of State lawmakers to provide more effective protection for flocks of sheep against the ravages of dogs. In Massachusetts this has taken the form of a new act placing dogs under the jurisdiction of the commissioners on fisheries and game, providing a reward of \$10 to every person who destroys a dog guilty on unmistakable evidence "of killing, chasing, or harassing sheep, lambs, or cattle," and making an express stipulation in every license that the dog which is the subject of the license shall be controlled and restrained from killing, chasing, or harassing sheep, lambs, or other domestic animals.

In New York an act approved June 9, 1917, amending and strengthening the dog license laws, authorizes any person to kill a dog "while it is attacking, chasing, or worrying any domestic

animal having a commercial value, or attacking fowls, or while such dog is being pursued thereafter." If sheep are attacked, chased, or worried by dogs in New York State, their owners may recover the amount of the damages caused from the owner of the dog, and "there shall be added to the amount of such damages the sum of \$2 for each ewe, of the age of one year or upward, attacked, chased, or worried by such dogs."

In Pennsylvania a bill has been passed and is now awaiting the signature of the governor, providing compensation and traveling expenses for officials who may have to investigate claims for damages done to flocks of sheep by vagrant dogs, and thus making the sheep protection law of the State very much more live and effective.

Under the laws of 1915 in the State of New Hampshire it is made unlawful for the owner or custodian of any self-hunting dog to permit any such dog to run at large in the woods or fields inhabited by game birds or quadrupeds, or where sheep are pastured between April 1 and December 1 of any year. An owner of sheep or lambs worried, maimed, or killed by dogs in New Hampshire may recover from the owner of a dog the amount of all damages sustained by an attack upon a flock, "including the value of any creature so killed or lost, any depreciation in value of a creature so wounded or worried, and any other loss or expense to which he may be subjected by such killing, driving, wounding, or worrying." In the State of Maine sheep owners can recover from the town treasury the damages to full value and 50 per cent additional for uses for which they are kept, whether as breeders or for other purposes, and any town paying such damages may maintain an action against the owner or keeper of the dog in question to recover the amount paid. "Any person who keeps a dog that kills or injures sheep or lambs shall be fined not less than \$50 or exceeding \$100 and costs, unless before the final disposition of the case the said owner or keeper of the said dog produces satisfactory evidence that the dog has been killed."

It is the general agreement of men acquainted with the industry that the depredations of dogs — generally worthless curs — have had more to do than any other single cause with the marked reduction of the flocks in the pasturages of New England, New York, and Pennsylvania. It is not merely the money loss represented by the sheep that are actually killed —

this can be made up to the sheep owners. But it is a well-known circumstance that when a flock of sheep is attacked the real loss is not measured by the killed and wounded animals — those that escape the fangs of the dog are frightened and reduced in value for breeding or wool-growing purposes. Moreover, the usual tendency is for farmers who have sheep attacked to sell the survivors of their flocks at the first opportunity and go out altogether from a business which has so much hazard. To all intents and purposes dogs roaming wild in the country stand in the same relation to sheep as did wolves and bears in the old days of the pioneers — in making very difficult the maintenance of any adequate supply of domestic animals. Too often twenty-five cents worth of dog has caused the disappearance of flocks worth many hundreds of dollars to their owners and to the community in which they live.

All over the northeastern part of the United States the dog nuisance has become a grave one because of annoyance and peril not only to sheep alone, but to human beings. Every rural community has its shiftless or vicious families whose pack of vagrant, snarling dogs is a terror to law-abiding neighbors and to passers-by. A stiffening up of State laws everywhere would be justified to put an end to this particular menace to life and limb, even if the important industry of sheep raising were not so vitally affected. Really valuable dogs are usually held in control; it is the miserable curs that do the damage. Just what such dogs cost the nation annually in the reduction of the wool supply and consequent enhancement of the cost of clothing cannot be stated with precision, but the sheep which might be raised on unused pasture lands of the older States if there were not the ever-present dog threat of killing and mutilation would undoubtedly represent many millions of pounds of wool a year.

A SOUTHERN PROTECTIONIST.

THE LATE CHARLES A. FARWELL OF LOUISIANA, PRESIDENT OF THE AMERICAN PROTECTIVE TARIFF LEAGUE.

THERE died recently in the far South, at New Orleans, a man who, though not a wool manufacturer, bore an important relation to this industry of ours, because he was the president of the

American Protective Tariff League — a Southerner and a believer in protection as a national policy to all national industries. The loss of Mr. Charles A. Farwell is a loss indeed. He was a native of New Orleans, the son of Charles A. Farwell from Rockland, Maine, and Martha Blain Farwell from Camden, South Carolina. Mr. Farwell was fifty-six years old at the time of his death. He had begun his business career on the plantation of an uncle, Richard Milliken, and had passed thence into the office of Mr. Milliken, a New Orleans merchant. Mr. Farwell's business life was remarkably successful. Very quickly he became one of the most distinguished men of his native State, president of the American Cane Growers' Association, a champion of American-grown sugar in national affairs. As the New Orleans "Times-Picayune" said of him on his death, "He knew more of sugar from the economic point of culture and manufacture perhaps than any other man in the State."

On January last he was elected president of the American Protective Tariff League, after having been for a long time one of its most influential managers. Mr. Farwell had the gift of clear and vigorous expression, and if he had been spared would undoubtedly have increased still further the scope of the effective work of the Tariff League.

His election to the presidency marked an important departure in protectionist activities — a recognition of the rapidly developing protectionist sentiment of that section of the country from which the anti-protectionist cause had secured most of its support for three-quarters of a century of our national existence. Originally, of course, the South believed equally with the North in the national encouragement of national industries. Its greatest public men, Washington, Jefferson, Madison, and Jackson, believed in protection to manufacturing, agriculture, and commerce. Even Calhoun himself was at first a staunch exponent of the protective system. But it was the misfortune of the South that negro slavery had the effect of making labor and industry seem inferior and undesirable in the eyes of white men, so that in the earlier first half century of this nation the North forged steadily ahead in industrial development while the South remained an agricultural region dependent on a single calling.

The quarrel over slavery between the Northern and Southern States, estranging the two sections, brought about a portentous

change in the opinions of Calhoun and his followers, or there would not have been for many years any tariff issue in America. Hatred of a protective tariff system under which Northern manufactures grew and prospered was given as one grievance of the seceding States, when in 1861 they withdrew from the Union.

But the new South, getting rid of slavery, found that it could manufacture equally with the North. Every new cotton mill established below Mason and Dixon's Line has been a nursery of protective tariff sentiment all the way from Virginia to the Gulf — and protectionist sentiment has been traditionally strong in the rice and sugar State of Louisiana. When Mr. Farwell organized the American Cane Growers' Association in 1896 he had the wisdom to make common cause on the protection issue with the American Beet Sugar Association. This bound together the South and the West and created a force which insured an adequate degree of protection to the sugar-growing industry, and has enormously increased the sugar production of the United States.

It has proved a great boon, not merely to the producers and manufacturers of sugar, but to the people of this country as a whole that adequate protection was maintained for so many years on the cane sugar industry of the Gulf and the beet sugar industry of the Middle and further West. More and more has the United States under this policy become independent of distant foreign sources of sugar supply, except from the closely neighboring islands of Porto Rico and Cuba, and from Hawaii and the Philippines. But for the protective tariff on sugar the American people would inevitably have become dependent to a very large degree on the bounty-fed sugars of the Continent of Europe, access to which of course would have been broken off almost wholly by the outbreak of the European war, as has been the case with England.

So critical was the British situation that in the very first days of the war the British government was compelled to scour the world and to purchase a supply of sugar for immediate consumption. Having no large, reliable sources of sugar supply in the British colonies, Great Britain has felt the pinch more and more severely until sugar has become an article of strictest rationing. Meanwhile the United States has had and apparently will continue to have an abundance of sugar from its own

continental domain and from its own insular dependencies. The importance of this may be estimated from the fact that the average family normally pays as much for its sugar as for its flour, month after month and year after year. The persistent campaign for the encouragement of American sugar production was founded on the instinct of self-preservation — and handsomely has it justified itself in our national experience.

All of this Mr. Farwell saw and of much of it he was himself a part. He was a splendid representative of his great industry, and with unflagging zeal whenever there was need he urged its cause in Washington. It was a fine stroke on the part of his colleagues of the American Protective Tariff League to make him their president, and had he lived he would have wielded a steadily more potent influence, for he knew the South and the South knew him and trusted him. His death came really on the threshold of the most significant phase of his career.

BRITISH WAR-TIME MANUFACTURING.

SHARP RESTRICTIONS PLACED ABOUT THE TRADE BY THE HOME GOVERNMENT.

GREAT BRITAIN has gone to extraordinary lengths in the regulation of the wool and woollen trade as a war measure. This industry of the United Kingdom is practically directed now by the military power of the government — representatives of the War Office, including Lieutenant Colonel F. Vernon Willey, of a name and family well known in the United States, having charge of wool purchases with Mr. Wilfred Ashley, M.P., as chairman, and representatives of the Board of Agriculture and manufacturers, merchants, and spinners interested. The rigor of the system under which our kin in the British Isles are operating may be gathered from these regulations issued on May 24 by the Army Council in pursuance of powers conferred on them by the Defense of the Realm Regulations :

1. — No person shall after June 11, 1917, put into manufacture any crossbred wool imported or to be imported into the United Kingdom, or any tops produced or to be produced therefrom, otherwise than :

(a) For the purpose of performing work of national importance, class "A," as defined in the order of the Army Council dated April 14, 1917, or,

(b) For the purpose of performing work certified to be work of national importance, class "B," by any District Priority Committee authorized as hereinafter provided in that behalf by the Director of Army Contracts, or,

(c) Under permit issued by or on behalf of the Director of Army Contracts.

2. — No person shall after July 2, 1917, put into manufacture any merino wool imported or to be imported into the United Kingdom or any tops produced or to be produced therefrom otherwise than :

(a) For the purpose of performing work of national importance, class "A," as defined in the order of the Army Council dated April 14, 1917, or,

(b) For the purpose of performing work certified to be work of national importance, class "B," by any District Priority Committee authorized as hereinafter provided in that behalf by the Director of Army Contracts, or,

(c) Under permit issued by or on behalf of the Director of Army Contracts.

3. — For the purposes of this order the Director of Army Contracts may authorize any District Priority Committee to require any particulars as to the business of any person engaged in the sale or manufacture of woolen or worsted goods, and to issue certificates and permits on his behalf.

4. — In any textile factory the business carried on in which consists wholly or partly in the production or manufacture of woolen or worsted goods, the weekly hours of work on weaving shall, except under permit issued by or on behalf of the Director of Army Contracts, be reduced after May 30, 1917, to a figure 20 per cent less than the average weekly hours of work on weaving in such factory during the month of March, 1917, provided that where such average amounted to $55\frac{1}{2}$ hours, the weekly hours of work on weaving as aforesaid shall be reduced to 45 hours.

5. — In any textile factory the business carried on in which consists wholly or partly in the spinning of worsted yarn, the weekly hours of work on spinning shall, except under permit issued by or on behalf of the Director of Army Contracts, be reduced after June 13, 1917, to a figure 20 per cent less than the average weekly hours of work on spinning in such factory during the month of March, 1917, provided that where such average amounted to $55\frac{1}{2}$ hours, the weekly hours of work on spinning as aforesaid shall be reduced to 45 hours.

6. — In any textile factory the business carried on in which consists wholly or partly in the spinning of any other yarn whereof wool is a constituent part, the weekly hours of work on spinning shall, except under permit issued by or on behalf of the Director of Army Contracts, be reduced after May 30, 1917, to a figure 15 per cent less than the average weekly hours of work on spinning in such factory during the month of March, 1917.

7. — In any textile factory the business carried on in which consists wholly or partly in the production or manufacture of hosiery, no person shall, except under permit issued by or on behalf of the Director of Army Contracts, put into manufacture in any week after May 30, 1917, a quantity of yarn whereof wool forms a constituent part exceeding a quantity 30 per cent less than the average quantity consumed weekly in such factory during the months of January, February, and March, 1917, such quantity to be estimated in pound weight.

As to the purposes which have resulted in this mandate, it is explained that the precautions taken are necessary to conserve supplies of wool so as to make certain that there should be no shortage of woollen clothing for the Allied armies in the field, having regard for the enormous demand for military clothing, the difficulties of shipping and other circumstances. These steps had to be taken or there would have been a practical certainty of drastic curtailment of the hours of employment in the winter months which would bear hardest on the working people.

First, army and navy needs; second, the export trade, is the procedure of the British authorities. The men who are defending Great Britain must be clothed, and well clothed, at all hazards, and the overseas commerce of the country must be guaranteed. After these things are done then regard is paid to the needs of the civilian population. It may seem strange to Americans that the British government should give the export trade in wool manufactures precedence over the home demand, but it must be remembered that this export traffic has been laboriously built up and is not lightly to be surrendered. British pride and imperial interests are enlisted in the maintenance of British markets for woollen goods around the world.

As to the reduction in the hours of labor, it is believed that the work-people will not too severely suffer, for rates of wages have been greatly increased since the war began — and it is anticipated that the workers will frankly recognize the situation and be content to “do their bit” toward the conserving of the

wool stocks of the empire. In each important district priority committees have been appointed to control the detailed administration of the measures essential to the conserving of the wool supplies. These committees are held responsible for the "rationing out" to the spinners and others in the district of such supplies of wool as are available for civilian purposes. This reduction in running time and output is to be equitably applied so far as possible over the entire industry. A further recommendation is to the effect that a week's holiday of at least six clear working days, not more than one of which shall be Saturday, shall be observed throughout the British woolen and worsted industry at some period between June 1 and October 1, 1917. Thus the British wool and woolen trade prepares to meet the further strain of war in a calm and resolute spirit highly creditable to the British character. Whether such restrictions will be necessary here in the United States the future must determine, but this does not now look probable.

QUARTERLY REPORT OF THE BOSTON WOOL MARKET
FOR APRIL, MAY, JUNE, 1917, AND JUNE, 1916.

DOMESTIC WOOLS. (F. NATHANIEL PERKINS.)

	1917.			1916.
	April.	May.	June.	June.
OHIO, PENNSYLVANIA, AND WEST VIRGINIA.				
(WASHED.)				
XX and above	56		68 @ 70	34 @ 35
X	55			31 @ 32
1/2 Blood				41 @ 42
1/4 "				42 @ 43
1/8 "				42 @ 43
Fine Delaine			75 @ 77	39 @ 40
(UNWASHED.)				
Fine	43 @ 44	46 @ 47	54 @ 56	30 @ 31
1/2 Blood	53 @ 54	56 @ 58	66 @ 68	37 @ 38
1/4 "	56 @ 57	60 @ 62	70 @ 72	39 @ 40
1/8 "	53 @ 55	59 @ 60	68 @ 70	38 @ 39
Fine Delaine	53 @ 54	55 @ 56	70 @ 71	33 @ 34
MICHIGAN, WISCONSIN, NEW YORK, ETC.				
(UNWASHED.)				
Fine	43 @ 44	45 @ 46	56 @ 57	27 @ 28
1/2 Blood	51 @ 52	54 @ 55	68 @ 69	35 @ 36
1/4 "	55 @ 56	61 @ 62	71 @ 72	39 @ 40
1/8 "	53 @ 54	59 @ 60	70 @ 71	38 @ 39
Fine Delaine	51 @ 52	53 @ 54	70 @ 71	30 @ 31
KENTUCKY AND INDIANA.				
(UNWASHED.)				
1/2 Blood	60 @ 61	62 @ 63	74 @ 75	40 @ 41
1/4 "	58 @ 59	60 @ 61	73 @ 74	39 @ 40
Braid	47 @ 48	48 @ 49	56 @ 57	33 @ 34
MISSOURI, IOWA, AND ILLINOIS.				
(UNWASHED.)				
1/2 Blood	53 @ 54	57 @ 58	69 @ 70	38 @ 39
1/4 "	51 @ 52	56 @ 57	68 @ 69	37 @ 38
Braid	46 @ 47	47 @ 48	55 @ 56	32 @ 33
TEXAS.				
(SCOURED BASIS.)				
12 months, fine, and fine medium . .	120 @ 125	130 @ 135	165 @ 170	75 @ 77
Spring, fine and fine medium	105 @ 110	120 @ 125	145 @ 150	63 @ 66
Fall, fine and fine medium	82 @ 84	90 @ 95	115 @ 120	55 @ 57
CALIFORNIA.				
(SCOURED BASIS.)				
12 months, fine	115 @ 120	130 @ 135	165 @ 170	73 @ 75
Spring, fine	105 @ 110	120 @ 125	135 @ 140	62 @ 64
Fall, fine	78 @ 80	90 @ 95	105 @ 110	55 @ 57
TERRITORY WOOL: Montana, Wyoming, Utah, Idaho, Oregon, etc.				
(SCOURED BASIS.)				
Staple, fine and fine medium	130 @ 135	135 @ 140	172 @ 175	80 @ 82
Clothing, fine and fine medium . . .	110 @ 120	115 @ 125	135 @ 155	75 @ 77
1/2 Blood	120 @ 125	125 @ 130	145 @ 150	78 @ 80
1/4 "	105 @ 110	110 @ 115	130 @ 135	72 @ 73
1/8 "	95 @ 100	100 @ 110	115 @ 120	69 @ 70
NEW MEXICO.				
(SCOURED BASIS.)				
No. 1	130 @ 140	145 @ 150	155 @ 160	72 @ 75
No. 2	110 @ 115	120 @ 125	130 @ 135	66 @ 68
No. 3	95	100 @ 105	110 @ 120	58 @ 60
GEORGIA AND SOUTHERN.				
Unwashed	48 @ 50	55 @ 60	67 @ 70	35 @ 36

DOMESTIC WOOLS.

The opening week of the second quarter of the year 1917 was one of the most eventful in the history of the wool trade of Boston and of the United States. Tuesday, April 3, following the declaration of war by President Wilson, the Boston wool trade, at a largely attended meeting under the auspices of the Boston Wool Trade Association, unanimously voted to suspend all trading in wool, both buying and selling, and to make a true inventory of their stocks of wool and tender the entire stocks to the United States Government at values as of April 2. As a result of the action of the Boston wool trade, practically all the wool markets of the United States fell in line with their tender to the Government. From April 3 to April 13 trading in wool was wholly suspended in Boston. On Friday, April 13, the Chairman of the Committee of Conference, with the Committee of the Advisory Committee of the Council of National Defense, reported that they were not in a position to avail themselves of the offer, although gratefully acknowledging the generous patriotic action.

The wool trade of Boston, being released from their pledge to restrain from trading, assumed its usual routine, gaining activity and greater strength day by day. The sale by dealers of territory wool contracts to some of the large mills augmented the underlying strength of the market. Buying in the West was resumed at very firm prices. April closed with a very active market at steady advanced prices. Mills were free buyers and speculation among the dealers was much in evidence.

May opened with higher prices, but with the broad speculation somewhat tempered, although buying in the West at this period was very keen, buyers taking wool freely everywhere. The heavy movement of wool continued throughout the month, the military needs of the Government creating a large and steady demand.

June opened with a steadily active market and a very marked activity in scoured wools. Public scourers have had more business than they could attend to even though running night and day. Very full prices continued to be paid in Montana and Oregon, with many growers holding for extreme prices, and throughout the fleece section competition ran rampant. During the middle of the month there was less activity, but without any change in values. The Department of Commerce announced that Great Britain had decided to allow the United States to import 45,000 bales of merino wool, about 15,000,000 pounds. At the time this report was made up, no details had been announced as to how the business was to be handled. The month closed with the local market passing through a quiet period following more liberal buying by the mills. The higher money rates and the cost of wool were not such as to lead merchants to feel as speculatively inclined as earlier in this quarter. At this time the Government announced that it proposed to fix maximum prices on oils, waste, and substitutes, but at this writing a basis of prices has not been reached.

F. NATHANIEL PERKINS.

PULLED WOOLS. (W. A. BLANCHARD.)

	1917.			1916.
	April.	May.	June.	June.
Extra, and Fine A	125 @ 145	145 @ 160	165 @ 175	73 @ 80
A Super	110 @ 130	130 @ 145	150 @ 160	68 @ 72
B Super	105 @ 115	115 @ 125	130 @ 140	65 @ 70
C Super	80 @ 85	90 @ 95	95 @ 105	52 @ 58
Fine Combing	115 @ 125	125 @ 140	145 @ 160	75 @ 80
Medium Combing	110 @ 120	120 @ 130	135 @ 145	70 @ 73
Low Combing	90 @ 100	100 @ 110	110 @ 120	63 @ 67

PULLED WOOLS.

With the exception of the limited interval from April 3 to April 12, when all sales were suspended pending the decision of the Government in regard to making use of the stocks of wool here and in other markets, demand has been phenomenally active and the rise in prices without precedent. While this large movement was to some extent speculative, heavy orders for khaki and blankets brought manufacturers into the market for medium and low wools. Civilian business took care of the finer grades. Stocks were sold up to production and by the middle of June all of the old wools had left pullers' hands. Some early lambs' supers were offered later in the month on a scoured basis of \$1.30-1.35, but only in small volume.

W. A. BLANCHARD.

QUARTERLY REPORT OF BOSTON WOOL MARKET. 271

FOREIGN WOOLS. (MAUGER & AVERY.)

	1917.			1916
	April.	May.	June.	June.
Australian Combing:				
Choice				44 @ 46
Good				42 @ 44
Average				39 @ 40
Australian Clothing:				
Choice				40 @ 43
Good				38 @ 39
Average				36 @ 38
Sydney and Queensland:				
Good Clothing				40 @ 42
Good Combing				43 @ 46
Australian Crossbred:				
Choice				*
Average				
Australian Lambs:				
Choice				36 @ 38
Good				34 @ 36
Good Defective				32 @ 34
Cape of Good Hope:				
Choice	63 @ 68	65 @ 70	70 @ 72	34 @ 35
Average	52 @ 57	55 @ 60	60 @ 62	25 @ 28
Montevideo:				
Choice	66 @ 68	76 @ 78	83 @ 85	41 @ 43
Average	63 @ 65	70 @ 75	75 @ 80	39 @ 40
Crossbred, Choice				38 @ 40
English Wools:				
Sussex Fleece				*
Shropshire Hogs				*
Yorkshire Hogs				*
Irish Selected Fleece				*
Carpet Wools:				
Scotch Highland, White	43 @ 44			*
East India, 1st White Joria				45 @ 46
East India, White Kandahar				42 @ 43
Donskoi, Washed, White				*
Aleppo, White				*
China Ball, White	45 @ 50	47 @ 52	50 @ 55	33 @ 38
" " No. 1, Open	43 @ 48	45 @ 50	45 @ 50	34 @ 38
" " No. 2, Open	41 @ 46	41 @ 46	41 @ 46	28 @ 31

* Out of market.

BOSTON, July 5, 1917.

FOREIGN WOOLS.

The activity in the market for foreign wools has continued through the past quarter. Large orders for army goods from the American Government has caused a steady demand for three-eighths and quarter blood South American wools, which has absorbed these wools about as fast as they arrived.

The demand has also embraced clothing wools, lambs, second clip, and skirtings, principally scoured, advancing values, and owing to the difficulty in getting wools scoured, reducing supplies of scoured wools to a limited amount.

Cargoes of Cape wools have arrived at intervals, and both scoured and grease wools have been taken for consumption promptly.

It is expected that Australian merino wools will shortly be shipped direct to this country and probably sold for account of the English Government. During this quarter many of the wools usually quoted were practically out of the market.

MAUGER & AVERY.

THE TEXTILE BUREAU.

An office in connection with the work of the Textile Bureau, to prevent the fraudulent undervaluation of imported textile manufactures, has been opened on the sixth floor of the Singer Annex, 95 Liberty Street, New York. Every instance of imported goods sold here at prices that suggest a probability of undervaluation should be immediately reported to the Bureau at the above address.

JOHN P. WOOD,
Director.

BULLETIN

OF THE

National Association of Wool Manufacturers

A QUARTERLY MAGAZINE

DEVOTED TO THE INTERESTS OF THE NATIONAL WOOL INDUSTRY.

VOL. XLVII.]

BOSTON, OCTOBER, 1917.

[No. IV.]

THE NEW BEDFORD TEXTILE SCHOOL.

AN INSTITUTE OF TEXTILE TECHNOLOGY.

By SERENO G. MILLER, M.E.

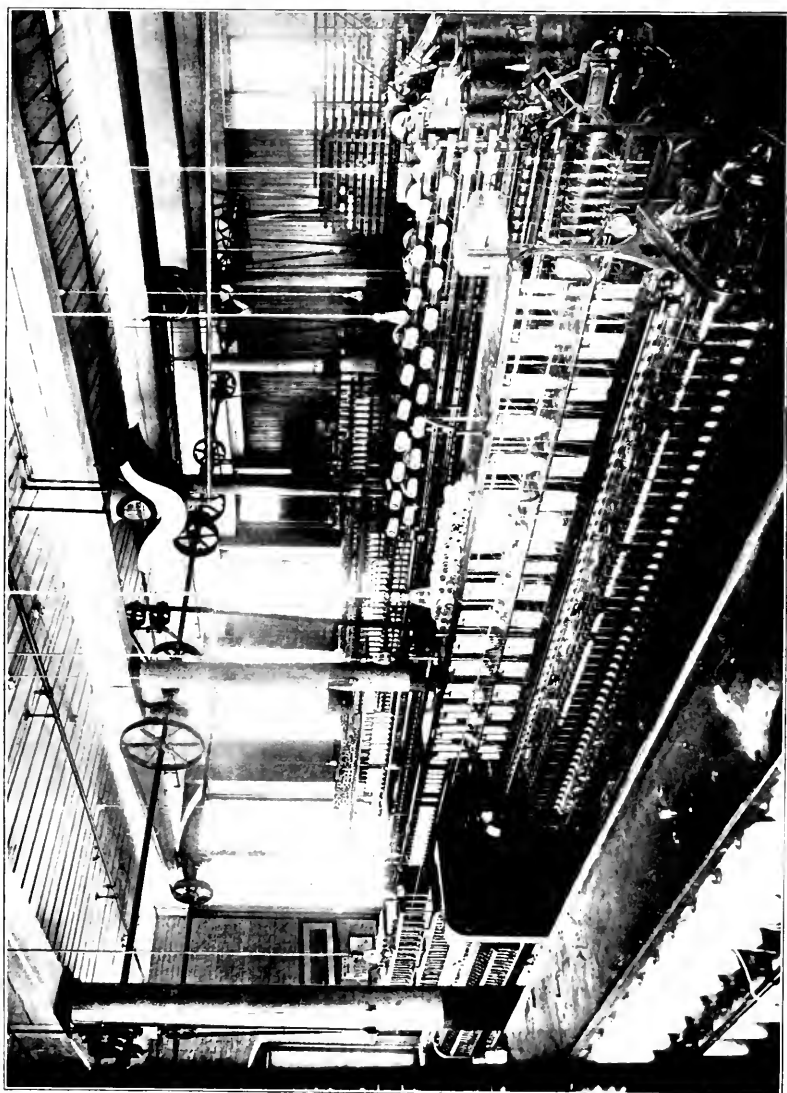
THE New Bedford Textile School was established in accordance with Chapter 475 of the Acts of 1895 of the Massachusetts legislature. The following abstract from Section 1 sets forth clearly the object of the school. "In any city of this Commonwealth, whose mayor shall, on or before the first day of July in the year eighteen hundred and ninety-five, file a certificate with the commissioner of corporations that said city has in operation four hundred and fifty thousand or more spindles, not less than nor more than twenty persons, citizens of this Commonwealth, may associate themselves together by an agreement in writing for the purpose of establishing and maintaining a textile school for instruction in the theory and practical art of textile and kindred branches of industry, with authority to take, by gift or purchase, and hold personal or real estate to the amount of three hundred thousand dollars."

New Bedford was one of three cities of the Commonwealth of Massachusetts to take advantage of this Act. On August 1, 1895, the first steps were taken to organize a corporation as prescribed by statute and a corporation known as the Trustees of the New Bedford Textile School was formed. The school is located in the geographical center of New Bedford, a city with a population of one hundred

twenty-five thousand and the largest cotton manufacturing city of fine yarns and fancy woven fabric in the country. These New Bedford statistics are interesting: There are located here thirty-eight textile corporations, with sixty-seven mills, and there are in operation over three million spindles and fifty-four thousand looms. Employees in these mills number over thirty-one thousand and capital invested in the cotton mills is in excess of forty million dollars.

Since the city of New Bedford is finely situated on Buzzards Bay, it has excellent shipping facilities by water, and also it is a terminal point on the New York, New Haven, and Hartford Railroad systems. The water route is used largely for supplying the cotton and coal required for the local mills. The climate is moist and unequalled in this country for cotton spinning. As New Bedford is primarily a cotton manufacturing city, this school naturally places instruction in the cotton branch of the textile industry first in importance, but also includes in its curriculum courses of instruction dealing with other fibers of both vegetable and animal origin.

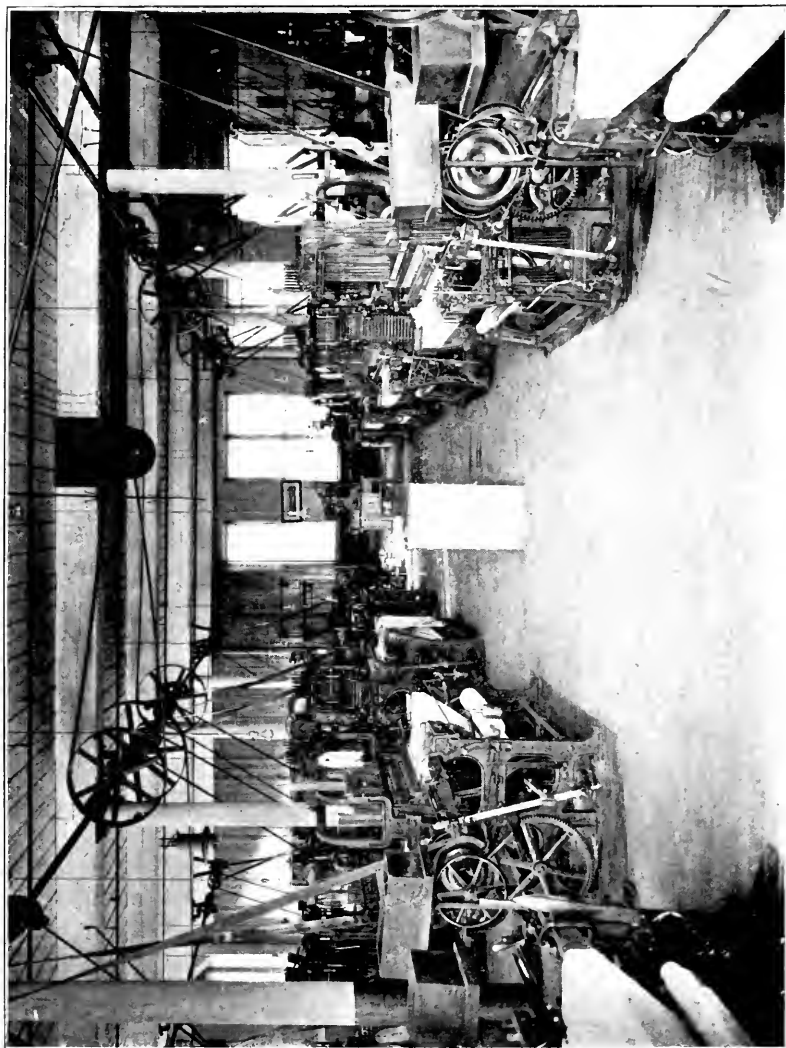
At the time this school was established there were but two textile schools in the country and this type of school was still in the experimental stage. The New Bedford school was the first to be housed in a building erected for the sole purpose of a textile school. In 1899 a three-story brick building was erected. This building had a floor space of twenty thousand square feet. The attendance was small at first, but owing to the continual and rapid growth of the school it was found necessary to make successive additions in 1901 and 1905 to care for the increased attendance and the additional equipment. These two additions increased the floor space to forty-six thousand square feet. The original building with the two additions now form one large building in which the greater part of the machinery for spinning, weaving, and knitting is installed. It also contains the power plant and the administration offices. Finally, these quarters were so crowded that it became necessary to have more room or turn away students, so in 1911 a new building was erected, adjoining the old building and connected



Carding and Spinning Department.

with it by a tunnel and bridges. The new building has a floor space of thirty-one thousand square feet, not including the basement. It contains a number of recitation and lecture rooms, a designing room, a drafting room, an assembly hall accommodating five hundred persons, two chemical laboratories, dyeing and finishing rooms, a machine shop, a steam laboratory, and an electrical laboratory. At the present time these buildings and their equipment are taxed nearly to their limit and in some departments applicants for admission are turned away for lack of room. There are now under way several large additions to mills in the city and past experience shows that when these mills are in full operation there will be an increase in the number of students and to accommodate them will necessitate further expansion of the school.

The equipment of the New Bedford Textile School comprises one of the most complete sets of exclusively cotton manufacturing machinery ever assembled under one roof. The machinery is of wide variety and the latest type made. Much of it has been designed especially for the school, and cotton machinery manufacturers assist in keeping their machines up to date with improvements and attachments, which are developed from time to time. The student during his course becomes familiar with most of the varieties of machinery that he is apt to come in contact with in the cotton mills of this country. No single mill could give him the same experience or afford him the opportunity to study these machines in detail. All of the machinery of the school is in actual use by the students for the manufacture of yarn and cloth and not simply used for demonstration purposes. To give a complete list of equipment would require more space than is available, so only a brief outline will be given of the machinery and working apparatus in use in each of the departments of the school.



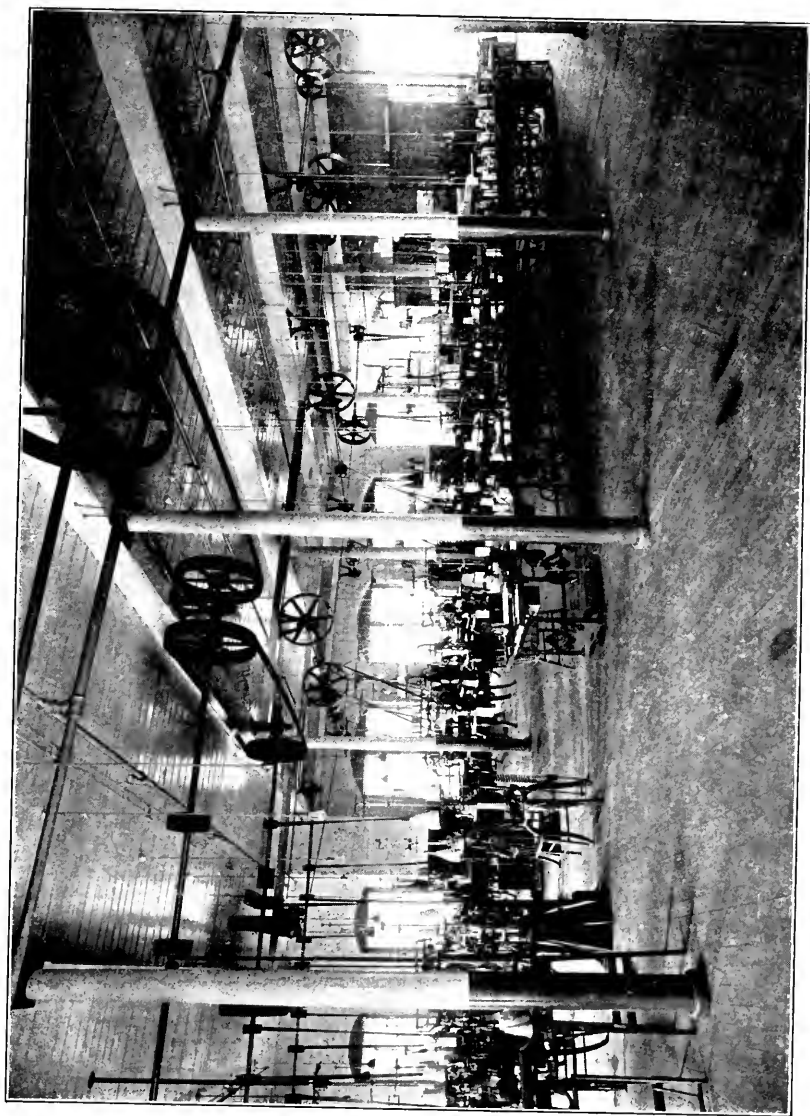
Weaving Department.

In the carding and spinning department where the manufacturing process consists in converting the cotton in the bale to yarn on the bobbin, there is a large variety of picking, carding, spinning, twisting, and winding machinery, including practically all of the makes found in this department of the modern cotton mills. There are six different makes of cards, four of drawing frames, and sixteen of spinning frames. The testing room has over twenty machines used experimentally by the student for testing the strength of the cotton fiber and observing its action under different atmospheric conditions. Also this department is equipped with many models of machinery mounted to make the parts more accessible for instruction, preliminary setting and adjustment.

The weaving and warp preparation department has fifty-eight power looms and other machines that are usually found in this department of a cotton mill, such as slashers, winders, warpers, spoolers, and beamers. The equipment includes many models and parts of machines, arranged to give each student all the practical experience required in connection with his study in the theory of designing and weaving cloth.

The equipment of the knitting department is very complete. It contains fifty knitting machines, twenty-four sewing machines, loopers, cloth dryers, hosiery and underwear press, folding and cutting machine, eyelet machine, winders, and many other machines used in the manufacture of knit goods.

In the designing department special attention has been given to the question of lighting the desks, which have been made so that the best work in designing and analysis of cloth can be done without undue eye fatigue. The equipment includes twenty-eight hand looms, by means of which the student tries out experimentally the designs he has developed. There are also available a Jacquard card-cutting machine, a Jacquard head for experiments, and a Troemer balance.



Knitting Department.

The department of chemistry and dyeing contains not only the usual extensive equipment to be found in a technical school offering courses in general chemistry, but also has complete sets of machinery for bleaching, dyeing, and finishing yarn and cloth. The advanced laboratory contains many kinds of experimental apparatus for investigation and research work in the chemistry of textiles.

The textile engineering department is sub-divided into the following sections:—mechanical drawing, steam and electrical engineering, and machine shop. The drafting room is equipped with individual desks and lights designed especially for this school. The steam laboratory contains a fifty-horsepower horizontal Wetherill Corliss steam engine, a five-horsepower vertical steam engine, and a variety of apparatus for testing and demonstration. The school power plant also is available for use in connection with the study of steam and electricity. The electrical laboratory is well fitted out to give instruction in both theory and practice. The machine shop contains forty-five machines, including fifteen engine lathes, and a complete outfit of small tools, many of which were made by the students themselves for some special work they had undertaken.

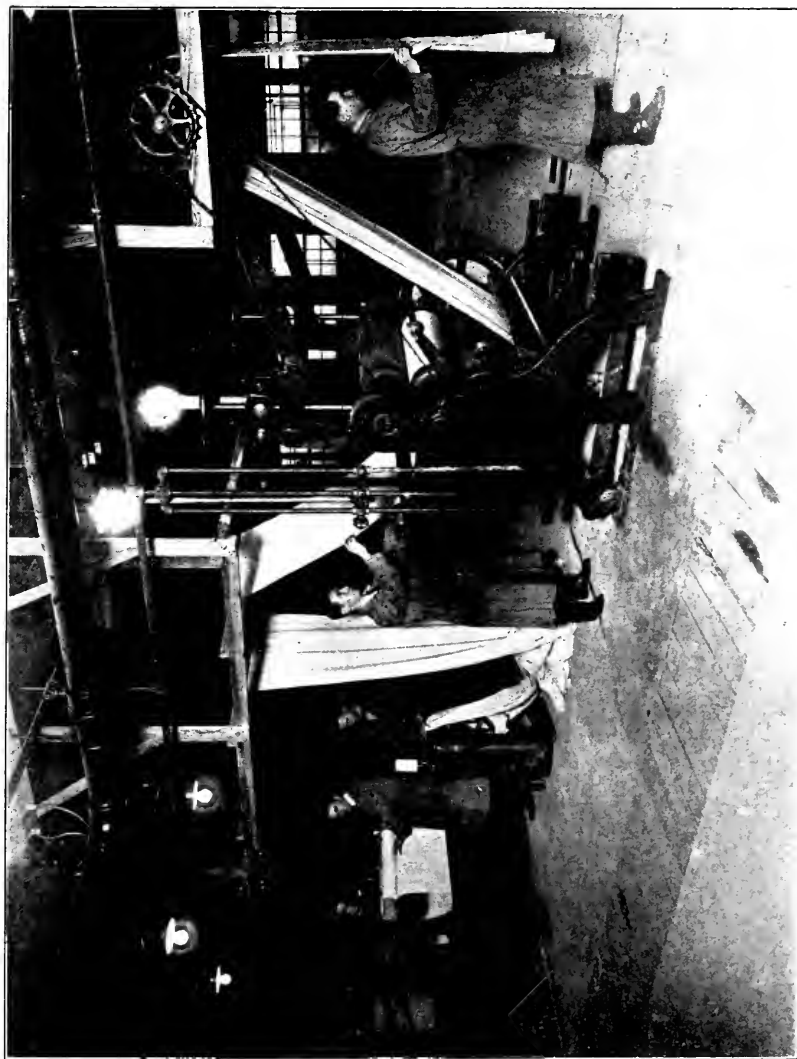
The courses of instruction offered are arranged to meet the needs of several classes of students. Many of the day students, as is the case with a large number of students in any technical school, have only a hazy vision, or perhaps none at all, of their future occupation and they are, therefore, incapable of selecting a course to meet their requirements. For such students the general cotton manufacturing course has been prepared. Those enrolled in this course give their entire time for three years in pursuit of studies, both in theory and practice, of cotton manufacturing and carry on all work required through all the processes from the raw cotton in the bale to the finished yarn or cloth. These students are advised to supplement their study by working in the cotton mills during the long summer vacation, and many avail themselves of this opportunity to shorten the period of adjustment required of the graduate before he can adapt himself to the

practical work and assume an executive position. However, there are many students who on entering the school have, through family connections or previous employment, quite definite ideas of the instruction they require and for them have been arranged regular day courses in chemistry and dyeing, knitting, designing, and engineering. Other more mature applicants may have had some unusual experience or have the qualifications that would warrant the arrangement of a special individual course, and this is sometimes done. Often an employer will select one from his employees and send him to this school at the expense of the mill. Students graduated from these courses are highly trained and highly specialized men who are soon to take their places in directing work in the cotton industry.

The New Bedford Textile School also provides instruction for evening classes. Students attending evening classes are men, many of mature age, who are employed during the day in the cotton mills or other industrial plants, and who are willing to spend two evenings a week for a period of several years and so obtain instruction equivalent to a three-year day course, without having to sacrifice their income during that time.

The instruction in the day and the evening classes is both technical and non-technical in nature, there being no sharp line of demarcation between the theory and the practice. In addition there are also offered for evening students, purely trade courses for those not speaking English or those not sufficiently well prepared to take advantage of technical instruction, but who wish to make themselves more proficient in their particular work, to become skilled beyond their immediate tasks, to fit themselves for a higher position, and to better their condition in general.

Nor are classes limited to men only. Certain cotton mill occupations may be and often are entered into by women. The school has accommodations for women students, and now has enrolled a number in the day class in designing and in the evening class in warp drawing-in.



Finishing and Dyeing Room.

The regular day courses of the New Bedford Textile School are as follows :

General cotton manufactur- ing.	Textile engineering.
Chemistry, dyeing, and fin- ishing.	Seamless hosiery knitting.
Designing.	Latch needle underwear knitting.

These courses are each three years long and when satisfactorily completed a diploma is awarded. High school graduates are admitted to any of these courses without examination, while applicants not thus prepared are required to pass an examination in arithmetic, English, and commercial geography. Candidates for admission to the chemistry and dyeing course and the textile engineering course are also required to pass an examination in elementary algebra and plane geometry.

The following is a list of courses of instruction given to the evening classes :

CARDING AND SPINNING DEPARTMENT.	WEAVING AND WARP PREPARATION DEPARTMENT.
Picking and carding.	Spooling, warping, and slash- ing.
Advanced picking and card- ing.	Plain loom fixing.
Combing.	Fancy loom fixing.
Drawing and roving frames.	French, Portuguese, and Po- lish classes in loom fixing.
Advanced drawing and rov- ing frames.	Advanced calculations in weaving.
Ring spinning and twisting.	
Mule spinning.	Drawing-in warps.
Cotton sampling.	
Advanced calculations in carding and spinning.	

DESIGNING DEPARTMENT.

Elementary and advanced
designing.

Elementary and advanced
analysis.

Jacquard designing.

Steam engineering, engines.

Elementary electricity.

Direct current machinery.

Alternating current machin-
ery.

CHEMISTRY DEPARTMENT.

KNITTING DEPARTMENT.

Special hosiery and under-
wear knitting.

General chemistry.

Qualitative analysis.

Quantitative analysis.

Organic chemistry.

Textile chemistry and dye-
ing.

ENGINEERING DEPARTMENT.

Mechanical drawing.

Machine drawing.

Descriptive geometry.

General engineering drawing.

Machine shop practice.

Steam engineering, boilers.

MATHEMATICS.

Cost finding.

Arithmetic.

Mill calculations.

The evening courses require the attendance of students two nights per week, and the course extends over a period of twenty-six weeks. Certificates are awarded to those who have satisfactorily completed two years' work and have passed an examination.

Each department of the school is in charge of a head instructor, with one or more assistants. During the past year there were thirty-seven instructors as follows: department heads seven, day assistants four, and evening assistants twenty-six.

The total number of students registered during the year 1915-1916, including both day and evening classes, was 1,509, while the total number attending during the same time was 1,227. Most of these students were residents of New Bedford, but many came from other towns in Massachusetts, Rhode Island, New York, New Jersey, and North Carolina, and some from South America and China.

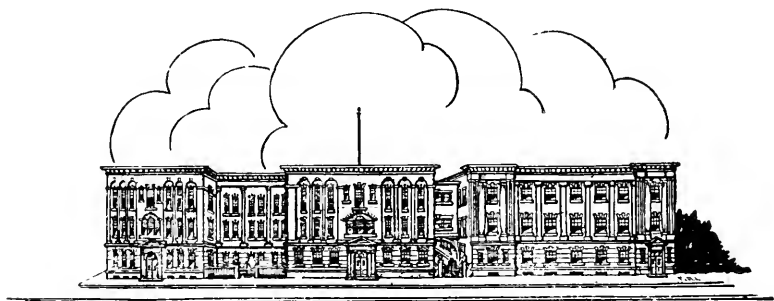


Drafting Room.

In addition to the work of the regular classes the school carries on much experimental work. It has on several occasions, through the chemistry and dyeing department, made analyses of the coal used in the local mills, and has been able to give advice resulting in coal economies. Government agents have performed tests here in connection with Western grown cotton. Also there has been prepared a complete set of dyed skeins for the United States Navy, to use for testing color vision.

Many of our graduates now hold high executive positions, and are making themselves felt in the cotton industry. That the school is justified in its methods of instruction is indicated by the positions attained by its graduates. The standard of the school is measured by the success of its graduates, who can be found employed in every principal occupation in the cotton manufacture, from treasurer down. Many others hold positions of honor and responsibility in various lines of business.

The conditions brought about by the war emphasize the value of a technical education and training in a textile school, and could the facts be ascertained doubtless we should find that many of our graduates have entered the service of the United States on duties for which the textile school has prepared them.



New Bedford Textile School.

THE WOOL MANUFACTURE IN THE WAR.

A RECORD OF THE WORK RECENTLY DONE BY AMERICAN MILLS FOR THE GOVERNMENT.

ACTIVITIES of the Joint Committee of Wool Manufacturers, coöperating with the War Industries Board of the Council of National Defense, for the production of uniform fabrics for the army and navy, have continued throughout the summer and autumn months. The work up to July has already been described in the pages of the Bulletin. To the regret of the committee and the officials of the government, Colonel John P. Wood, the president of the National Association of Wool Manufacturers and the chairman of the Joint Committee, tendered his resignation of the chairmanship when his command, the First Pennsylvania Cavalry, was mobilized in the middle of July — soon afterward it was transferred to Camp Hancock, Augusta, Georgia. Mr. Nathaniel Stevens, president of M. T. Stevens & Sons Company of North Andover, Mass., who had been chosen vice-chairman of the committee and had served for a while as acting chairman, was elected by the committee to the chairmanship in succession to Colonel Wood.

On July 17 and 18 the Joint Committee met in Washington and completed certain recommendations for a revision of specifications for the 11-ounce, 18-ounce, and 30-ounce navy fabrics, and held a conference with Paymaster Hancock of the Bureau of Supplies and Accounts, Paymaster Venable, and other officials of the service. At the same time the committee considered, with Mr. Charles Eisenman of the Committee on Supplies of the Council of National Defense, certain proposed new specifications for 8½-ounce shirting flannels and 16-ounce uniform fabrics for the army, with a view to making these specifications as definite in detail as possible. Chairman Stevens and members of the committee also reached an agreement with the officials of the American Red

Cross in regard to meeting their needs for blankets. On July 20 Chairman Stevens and members of the committee met a gathering of dyestuff manufacturers, mill chemists, and others with expert knowledge on the subject at the office of the Woolen Goods Exchange in New York, and in conference with them and with Paymaster Venable of the Depot of Provisions and Clothing at the Brooklyn Navy Yard discussed the best methods of procedure to meet the revised navy requirements so far as dyestuffs were concerned. Bulletins calling attention to the particular requirements of the new navy specifications were sent, under the auspices of the committee, to all the members of the National Association of Wool Manufacturers and the American Association of Woolen and Worsted Manufacturers.

At a meeting of the Joint Committee in New York on August 17 Chairman Stevens reported the progress that had been made by the new Committee on Wool Supplies, of which Mr. Jacob F. Brown is chairman, toward the purchase by the War Department of raw wools for fabrics required for army use. He called attention to the government need of luster serge fabrics for lining purposes under new specifications.

NEED OF WOOL CONSERVATION.

Another conference of the Joint Committee of Wool Manufacturers with Mr. Charles Eisenman of the Committee on Supplies of the Council of National Defense was held in Washington on September 13. The committee had expressed dissatisfaction with the character of some of the goods purchased for army use, and Mr. Eisenman explained that these were spot goods bought in response to an emergency demand. Mr. Eisenman expressed the wish that the committee would designate a skilled manufacturer or manufacturers to serve permanently in Washington to advise the Committee on Supplies. Mr. A. W. Shaw, Chairman of the Commercial Economy Board, joining Mr. Eisenman, asked the committee what was being done to discourage the continued civilian use of all-wool fabrics — urging that if the soldiers were going into

the trenches in clothing partly of reworked wool and partly of cotton, it was not fair or becoming that all-wool should be demanded and used by those who stayed at home. Chairman Stevens, Mr. Hetzel, and other members of the committee explained to Chairman Shaw and Mr. Eisenman that wool manufacturers had already taken steps to economize in the use of new wool for civilian fabrics, but that these fabrics in which substitutes were used had not met with favor from clothiers and other customers of the mills. It was made clear to the government officials that Colonel Wood and his colleagues had at the very beginning foreseen the extraordinary demands that would be made upon the wool supply of the country, and had taken the initiative in emphasizing methods by which new wool could be economized. The Joint Committee unanimously voted to call a large representative meeting of the wool manufacturers of the country to consider further the need of conserving the wool supply and adopting a definite line of action. It was determined that the Joint Committee should call a meeting of the governing bodies of the National Association of Wool Manufacturers and the American Association of Woolen and Worsted Manufacturers, to be held on September 20 at the office of the Woolen Goods Exchange in New York City for the purpose of preparing for a general meeting of manufacturers and creating a special committee on the conservation of wool.

In pursuance of the understanding with the Committee on Supplies, a fully attended meeting of members of the Executive Committee of the National Association of Wool Manufacturers and the directors of the American Association of Woolen and Worsted Manufacturers was held on September 20 at the office of the Woolen Goods Exchange in New York, Mr. Herbert E. Peabody, president of the American Association, presiding. Mr. Nathaniel Stevens, chairman of the Joint Committee, explained the attitude of the government toward the threatened wool shortage—it was not asked that no all-wool fabrics be manufactured, but that the manufacturers themselves should devise means to reduce

the amount of wool utilized for civilian fabrics as far as was practicable, in the various branches of the industry. On the motion of Mr. William M. Wood, president of the American Woolen Company, the meeting voted unanimously to create a special Manufacturers' Committee on Wool Conservation, to carry out the desire of the industry and the government. This committee, as appointed by President Peabody, is as follows:

- Mr. Franklin W. Hobbs of Boston, president Arlington Mills, chairman.
- “ W. J. Battey, Battey, Trull & Company, New York.
- “ Frederic S. Clark, president Talbot Mills, North Billerica, Mass.
- “ A. L. Gifford, Worumbo Company, New York.
- “ Edwin Farnham Greene, treasurer Pacific Mills, Boston.
- “ George C. Hetzel, president George C. Hetzel Company, Chester, Pa.
- “ George H. Hodgson, vice-president and general manager Cleveland Worsted Mills Company, Cleveland.
- “ William Maxwell, treasurer The Hockanum Mills Company, Rockville, Conn.
- “ Manton B. Metcalf, Wanskuck Company, New York.
- “ H. E. Peabody, Shelbourne Mills; president American Association of Woolen and Worsted Manufacturers, New York.
- “ J. P. Stevens, J. P. Stevens & Co., New York.
- “ Nathaniel Stevens, president M. T. Stevens & Sons Company, North Andover, Mass.
- “ Richard A. Strong, Strong, Hewat & Company, New York.
- “ William M. Wood, president American Woolen Company, Boston.
- “ Winthrop L. Marvin, secretary, Boston.

The new committee immediately appointed a sub-committee, consisting of Mr. Frederic S. Clark, Mr. Richard A. Strong, and Mr. Edwin Farnham Greene, to prepare a definite plan of action for various branches of the industry, in anticipation of a conference to be held September 26 in Washington.

The Manufacturers' Committee on Wool Conservation met again in Washington on September 27, and approved the text of the brief, stating definitely how wool conservation could best be achieved. This brief, offered by Mr. Frederic

S. Clark, chairman of the sub-committee which had framed it, was as follows:

“MEMORANDUM PRESENTED TO MR. CHARLES EISENMAN OF THE COMMITTEE ON SUPPLIES, AND TO MR. A. W. SHAW, CHAIRMAN OF THE COMMERCIAL ECONOMY BOARD, OF THE COUNCIL OF NATIONAL DEFENSE,

SEPTEMBER 27TH, 1917,

BY THE

MANUFACTURERS' COMMITTEE ON WOOL CONSERVATION.

“For the purpose of considering the suggestion of the Committee on Supplies and the Commercial Economy Board, that the wool supply for army and navy requirements should be conserved by the use of wool substitutes in fabrics for civilian wear, a meeting was held in New York on September 20th of the Executive Committee of the National Association of Wool Manufacturers and the Directors of the American Association of Woollen and Worsted Manufacturers.

“The committee here present was appointed at that meeting to confer with Mr. Eisenman and Mr. Shaw, preliminary to the calling of a meeting of woollen and worsted manufacturers to take such definite action as may seem practicable.

“Before proceeding to the general discussion of the subject, we wish briefly to state some of the points brought out at the New York meeting:

“1. There has always been a considerable quantity of cotton yarn, raw cotton, and reworked wool used in the manufacture of woollen and worsted fabrics, and because of the rapidly advancing cost of wool during the past year and a half the percentage of these substitutes has very largely increased, and will automatically tend still further to increase while high prices for wool prevail. For example, a very large dress goods mill in September, 1915, had only 950 looms, or 31.7 per cent of its weaving equipment, engaged on cotton warp fabrics, and 2,050 looms, or 68.3 per cent, engaged on all-wool worsted fabrics, while in September, 1917, this mill had 2,395 looms, or 77.2 per cent of its weaving equipment, employed on cotton warp fabrics and only

705 looms, or 22.8 per cent, employed on all-wool worsted fabrics. The largest of the men's wear organizations has had a similar experience in the increased production of mixed goods. A prominent carded woolen mill, which had never produced cotton-mixed fabrics before the past two seasons, has now been making several fabrics of cotton carded with wool and of cotton warp and wool filling, up to a proportion of 50 per cent of cotton. Wool has also been conserved since the price of this material advanced by a general tendency to make lighter weight goods, requiring in the main the finer wools not adapted to military purposes.

"2. So far as carded wool fabrics are concerned, it is practicable for most mills to use all of these substitutes and produce fairly acceptable goods, both as to appearance and wear, and we stand ready to recommend that all carded woolen mills put out for the next fall season at least one substantial line in which wool substitutes are embodied.

"3. Worsted fabrics, however, are in a very different class. Mills that are properly equipped, and those that simply weave and finish, can use cotton yarn for warps, but those that are equipped to manufacture goods from raw wool to finish cannot use cotton warps without shutting down a large portion of their machinery. The effect on the cost of production and permanent loss of labor organization can be readily appreciated. Already cotton warps are scarce because of the increasing demand, and these yarns will be still harder to secure and more expensive if still more mills attempt to utilize them. But in case of the relatively few worsted mills equipped with French spinning machinery it is possible, though after much experimenting and the installing of additional equipment difficult to obtain, to make merino yarns, and we stand ready to recommend that mills thus equipped endeavor to produce such yarns.

"4. Many manufacturers, both of woolens and of worsteds, have by patient and painstaking effort brought their products to a parity with foreign fabrics as to design, coloring, and quality. For these mills to cease, or materially to reduce, the making of these fabrics and produce inferior

qualities would be deplorable, both from an individual and a national standpoint.

“5. This would be all the more unfortunate, and manifestly unjust, if the importation of foreign all-wool fabrics were allowed to continue without restriction as to quality. In the fiscal year ending June 30, 1917, importations came from Great Britain to the amount of 5,000,942 pounds of cloths and 764,068 pounds of dress goods. Leaving the latter out of the question, the former were largely all-wool goods, and the quantity was sufficient to provide at least 1,500,000 men with one suit each. With American manufacturers materially curtailing the production of all-wool goods, importations would largely increase and obtain a footing in this market which would be difficult to overcome after the war.

“6. Aside from what manufacturers may do in the way of conserving the wool supply by the use of substitutes, there are two ways in which the government may vastly help the situation :

“1. By arranging with Great Britain to release for shipment to us 200,000,000 to 300,000,000 pounds of Australian and New Zealand wools.

“2. By providing shipping for the same, and also for the South American clip which comes on the market October first.

“It is well known that Great Britain has accumulated a great amount of Australian and New Zealand wools, much more than is necessary for its own needs for a long time to come ; also, that shipping permission has been withheld on quantities of these wools bought and paid for months ago by American manufacturers. This restriction by Great Britain on the natural importation of these wools has resulted in making the prices of these and similar wools from 30 to 70 per cent, according to grade, above the prices in the United Kingdom.

“Certainly the aid which our government is giving to Great Britain in the way of loans and favorable prices on materials should enable us to secure not only the release

of the wools already owned by our manufacturers, but an opportunity to purchase an additional large quantity. We seriously urge an immediate and most determined effort on the part of our government officials to this end, and also to the provision of adequate shipping.

"Finally, the sentiment was unanimously expressed at the New York meeting that the wool manufacturers of the country, feeling it to be a patriotic duty to aid the government in every way possible, would do all in their power to conserve the wool supply, that there may be no lack of proper material for the equipment of our army and navy.

"The New York meeting adjourned with the understanding that a general meeting of woolen and worsted manufacturers will be called after the conference between Messrs. Eisenman and Shaw and this committee, and that at this meeting which we hope Mr. Eisenman and Mr. Shaw will attend, the committee will particularly recommend that in the designing of fabrics for the fall of 1918 the suggestions under No. 2 and No. 3, as to the use of substitutes, be adopted for the guidance of the whole industry."

The brief as adopted was read on the same day by Chairman Hobbs at a conference of the committee, with Mr. Charles Eisenman of the Committee on Supplies and Mr. A. W. Shaw, chairman of the Commercial Economy Board, of the Council of National Defense, Mr. W. S. Gifford, director of the Council, and Mr. P. C. Anderson, director of the Exports Administrative Board. Messrs. Gifford, Eisenman, Shaw, and Anderson all spoke earnestly on behalf of a coöperative effort to conserve the country's wool supply, and the following resolution in regard to the export of wool manufactures, which had been adopted by the Manufacturers' Committee, was presented :

RESOLVED, That in regard to the export of American woolen and worsted goods, we are of the opinion that it would be unwise from a national standpoint to interfere with this important trade by prohibiting exports. In any event, the Exports Administrative Board should make a prompt ruling to allow orders now in hand to be filled, and to grant a period of at least six months for this purpose.

The sub-committee considering the subject of the export of wool manufactures consisted of Mr. Manton B. Metcalf of the Wanskuck Company, chairman; Mr. John R. Munn of the American Woolen Company, and Mr. John S. Lawrence of Lawrence & Company. Another sub-committee of the Manufacturers' Committee on Wool Conservation was established to facilitate the importation of raw wool. Members of this committee, besides Chairman Franklin W. Hobbs, Mr. William M. Wood, and Mr. Nathaniel Stevens, are: Mr. Stephen O. Metcalf of the Wanskuck Company, President Daniel G. Wing of the First National Bank of Boston, Mr. William E. Jones, president of the Boston Wool Trade Association, Mr. Albert W. Elliott of Jeremiah Williams & Company, and Mr. Vaughan Jealous of the American Woolen Company.

A conference called for the purpose of determining the best policy to pursue in controlling the export of woolen rags was held in New York at the office of the Woolen Goods Exchange on October 3, there being present representatives of the woolen rag dealers, manufacturers of reworked wool and wool manufacturers. Chairman Nathaniel Stevens of the Joint Committee presided. After a full interchange of views it was decided to send to Mr. Eisenman of the Committee on Supplies, and to Chairman Shaw of the Commercial Economy Board, a recommendation that the export be permitted of all felt goods not woven and of black cloth, dark cloth, brown cloth, stock — types of rags not ordinarily used for manufacture in this country. At a meeting on the same day, in New York, of the Joint Committee of Wool Manufacturers, Mr. Frederick R. Edington of the American Woolen Company was added to the committee, with the understanding that he should give all assistance possible in technical matters to Mr. Eisenman of the Committee on Supplies in Washington, and Mr. C. Brooks Stevens, treasurer of the United States Bunting Company and the Middlesex Company, was invited to serve as a special representative of the carded woolen branch of the industry in connection with the Committee on Supplies in Washington. Mr. Stevens also was elected a member of the Joint Committee.

A LARGE NEW YORK MEETING.

The general meeting of wool manufacturers and merchants called by the new Manufacturers' Committee on Wool Conservation was held at the Waldorf Astoria, New York, on the forenoon of October 10, several hundred being present. Mr. Herbert E. Peabody, president of the American Association of Woolen and Worsted Manufacturers, presided. Chairman Stevens of the Joint Committee and Chairman Hobbs of the Manufacturers' Committee on Wool Conservation spoke briefly, describing the work and the purposes of their committees. Mr. Eisenman of the Committee on Supplies and Chairman Shaw of the Commercial Economy Board, in vigorous addresses urged the manufacturers to act together as one man to economize as far as possible in the use of new wool for civilian fabrics, to the end that the largest possible amount of new wool might be available for the use of the army and navy, and also that an increased supply might be carried over to the new year. It was deeply gratifying to the assembled manufacturers to hear Mr. Eisenman declare: "From my intimate connection with the woolen industry for the past seven months, I can frankly say that I have not been in contact with any industry that has met the situation as finely and openly as has the woolen industry."

Mr. Frederic S. Clark of North Billerica, president of the Talbot Mills, offered the following resolutions which were unanimously adopted by the meeting:

RESOLVED, That for the purpose of meeting the earnest recommendation of the Committee on Supplies and the Commercial Economy Board of the Council of National Defense that the wool supply for the United States army and navy requirements be immediately conserved by the use of wool substitutes in fabrics for civilian wear, we, wool manufacturers of the United States, agree:

1. To place upon the market for the fall season of 1918 and for subsequent seasons so far as may seem necessary, as many lines as our respective equipments will permit, of fabrics containing a material percentage of other stocks than virgin wool.

2. To discourage the use of wool for purposes other than are essential for the comfort and health of the civilian population.

We request the government to coöperate with the manufacturers to enlighten the American people as to the need of conserving the wool supply of this country for their own welfare and for the comfort and health of the men of the army and navy.

We authorize the present Manufacturers' Committee on Wool Conservation, representing the entire wool manufacturing industry, to take all necessary action to put into effect the foregoing plan.

The above resolutions are intended to indicate the following :

First: That to avoid actual shortage of the wool supply during the year of 1918, and to enable the government to accumulate a reserve stock such as is desired, all carded woolen manufacturers should use wool substitutes to the largest possible extent.

Second: That all weavers of fancy worsted fabrics should use cotton and wool substitutes so far as possible.

Third: That manufacturers of staple and fine cloths should confine their fabrics to such as call for grades of pure stock not required or called for by government fabrics.

Fourth: That spinners should cease the manufacture of all yarns other than those suitable for military, naval or Red Cross requirements, or necessary civilian use.

As desired by the Manufacturers' Committee on Wool Conservation, an account of this general meeting of the wool manufacturers, with a copy of the brief of the Manufacturers' Committee on Wool Conservation, was sent to every woolen mill in the United States, so that every manufacturer may know what his government asks and may do his share to make completely effective the program outlined by Mr. Eisenman and Mr. Shaw for the conservation of the wool supply.

CONTROLLING THE EXPORT TRADE.

Following the general meeting, another session of the Manufacturers' Committee on Wool Conservation was held, Messrs. Eisenman and Shaw both being present with the members of the committee. For the Sub-committee on the Export of Woolen Goods Mr. Manton B. Metcalf of the Wanskuck Company offered the following resolutions,

outlining the precautions which should be taken to control the export trade in woolen goods. The resolutions were duly adopted.

WHEREAS the ruling of the Exports Administrative Board permits the shipment of woolen goods which have no military value and which were on order prior to September 25, we desire to bring to the attention of the Exports Administrative Board the question of subsequent orders, so that exporters of woolen goods can be properly guided in the conduct of their business.

We deem it essential to pay for the imports of raw materials by the export of finished products.

We deem it advisable to promote the trade in woolen exports, particularly to Latin America, who look to us to replace the deficiency of their woolen imports from Europe.

Acting under the encouragement of the Administration, many woolen manufacturers have gone into foreign markets at considerable expense to themselves, to establish an export business. And while the volume of the exports of woolen goods is relatively small, it is growing, and is valuable to many allied industries and to the commerce of the United States.

We consider it important that our export houses be encouraged to maintain and develop their foreign organizations, and not unnecessarily be obliged to withdraw, with consequent loss in prestige and reputation.

We are asking for action on the application for license at the time the orders are submitted, so that we can give a prompt answer to customers as to whether their orders can be filled, and also that the mills may not have to proceed to manufacture goods which may prove to be unsalable in the domestic market if license to export is refused.

THEREFORE, BE IT RESOLVED, that as authorized by the Manufacturers' Committee on Wool Conservation, the Sub-committee on Exports recommends to the Exports Administrative Board the continued permission to export goods made partially or wholly of wool not suitable for military purposes.

We recommend that application for license to export should be forwarded directly to the Exports Administrative Board on receipt of the order, with full information as to the character of the goods, so that applications can be granted or refused before the mills engage in the manufacture of the merchandise.

We further recommend that in order to give time for manufacturing, the licenses should permit of shipment within six months after the date the license is approved, subject to the requirements of the government at the time of shipment, and subject also to any change of ruling on the part of the Exports Administrative Board.

At another meeting of the Joint Committee of Wool Manufacturers in New York on October 23, suggestions from the Noil and Waste Committee, looking to an increase in the maximum prices that had been recommended for these materials, were received and considered, and Mr. Charles H. Wilson of James & E. H. Wilson, and Mr. Spaulding Bartlett of S. Slater & Sons., Inc., were appointed a sub-committee to examine the proposed increased prices, with a view to recommending the proper action to be taken. After several conferences, a revised list of maximum prices was harmoniously agreed upon, accepted by the Committee on Supplies at Washington, and duly announced.

Steps have been taken to secure an accurate list of all the woolen mills of the United States that are engaged upon government fabrics, and a list, furthermore, of mills that can undertake the production of such fabrics in case of further need. The wool manufacture was one of the very first of the national industries to organize a representative committee and make a formal offer of its services to the government. The work has been carried out smoothly, without friction, in a spirit of unity. Substantially one-third of the available woolen machinery in this country is now engaged upon government military and naval contracts, and further assistance is being given the American Red Cross. There has been no effort from any source to enforce anything like compulsion. There has been only a direct appeal to the patriotism of American manufacturers, and the appeal has sufficed; it has proved entirely effective.

WINTHROP L. MARVIN.

HOW WOOL IS SOLD IN GREAT BRITAIN.

SURVIVAL OF OLD AND WELL-TRIED METHODS.

By S. BANKS HOLLINGS.

It is impossible to write on such a subject as this without first of all saying that conditions in the entire wool trade are not normal.

It is to be expected, however, that we shall ultimately see a return to the old cherished state of affairs, and though this will not be yet, and though there will also probably be new features which will tend to destroy the familiarity of the old régime, the practices which have been in vogue so long have proved so satisfactory that even if they never come back again they are well worth being placed on record.

The business of wool sellers, quite apart from all the processes through which the raw material passes in later stages, is a most interesting one, and may be presented under various aspects. So far as Colonial wools are concerned, the method of selling by auction has proved eminently satisfactory, and this is one of the reasons why there has been such strong opposition against government interference. There has undoubtedly been some justification for the statement that private selling and its consequent absence of published prices could not do otherwise than be the means of introducing abuses and dissatisfaction. In normal times wools grown in the Colonies, that is Australia and New Zealand, and also in South Africa, were dealt with in one of two different ways. The owner of a sheep station in Australia might ship his wool to London, giving instructions to one of the firms of selling brokers to sell it on his behalf. He could either leave it to their discretion as to what it was worth, or place his own limit upon it, and the selling broker would act according to the instructions given. On the other hand, the grower might sell his wool in one of the centers in his own country. He would then receive payment, and his responsibility respecting the wool itself would cease. This wool might be shipped either to London to be sold again, or possibly direct to some

Yorkshire manufacturing center. In the event of the former taking place, the clip would be placed very largely on the same footing as any which might have been shipped direct on growers' account. It would be offered in the same market, possibly come under the eye of the same competitor, and the prices bid would be in proportion to their usefulness from the user's point of view. This system applies particularly to Colonial wools, and a very different method is normally in vogue with regard to home-grown produce. The practice of selling Colonial wool in London has been continued for over a hundred years, and is really an integral part of the great Colonial wool trade. It would be practically impossible to deal with the tremendous weight of wool which comes to London in any other way, for the method of staging in the warehouses is such that intending buyers are able to handle the wools with the greatest freedom and facility, and thousands of bales can be dealt with in one day.

The growth of the English wool trade has been on very different lines. At home we have no large clips like there are in Australia or New Zealand. The wool itself is often of a more mixed and miscellaneous character, and it takes a considerable number of clips to make up anything like the quantity turned off at one shearing on many of the Colonial stations. The result is that buying English wool is often done in a more piecemeal fashion. It may be estimated that taking the entire English clip together, the quantity sold privately is about the same as that sold by auction. With regard to private sales, prejudice and friendship have during the years exercised some little influence in deciding who should be the buyer. It has been the custom for merchants to go round the country, either personally or to send their agent, whose business it was to visit the farms and inspect the wool on the place where it was grown. In this way connections have been built up extending over a considerable number of years. Years ago this inspection and buying was probably made into a much more protracted business than it is to-day. Farmers were never credited with wanting to be in a hurry, and they had no objection to spending a few hours haggling over the price of their wool, meanwhile imbibing a few glasses

of ale in the local tavern. To-day there is less of this kind of work carried on, but before the government became masters, there was still some private buying, its extent being about on the ratio already named.

One reason why private sales are not as numerous and as popular as they used to be is that the farmers themselves are becoming more wide awake. They have learnt by experience that competition is a good means of helping prices, and whether it be cattle or wool the principle holds good. When a wool buyer visited the farm the process of haggling was long because naturally the farmer wanted all he could get, and the buyer wished to buy as cheaply as possible. If the latter were keen, he would go on the take-it or leave-it principle, under which conditions there was a probability of the seller not getting a fair price. The fact is that the development of competitive bidding has done a great deal to bring English wools into their rightful position, and there is no reason why an increasing quantity should not be sold in this way.

The quantities of British wool which can be sold at auction are naturally not large, and consequently it has never been worth while to make provision for its disposal on such a large scale as has been found necessary for Colonial wools. In London there are tremendous warehouses, where the wool can be stored and inspected, and the salesroom is set apart where buyers can come together at a stated time and make their bids on any lot in which they may be interested. The result is that instead of having the appearance of a sale a wool auction more often than not looks like a public meeting gone mad. Little of this is seen at an English fair: the wool is brought together in the market hall, or possibly pitched in the open. Before the war commenced scores of these fairs were held during the course of the season. Buyers went from one to the other picking up any wools that suited them, and of course there was always a considerable amount of competition among them.

The whole of the Scotch wool trade, or nearly so, is in the hands of Glasgow and Edinburgh wool brokers. To these the farmers as a rule consign their clips, the brokers selling

same on commission. Of course there is a certain proportion bought outright by a few country dealers, but the bulk receive farmers' consignments and then sell to English manufacturers. Previous to the war a very large proportion of the Scotch clip was shipped to the United States, and at the present time about three million pounds have been set apart for immediate export there, the price being 38 cents for unwashed Scotch Blackfaced delivered here. This was taken over from farmers at 24 and 24½ cents per pound.

Irish wools are sold almost entirely by private treaty. There are quite a host of country dealers throughout the Emerald Isle. Several Bradford merchants also go over in the month of May and remain at given centers competing with local Irish merchants for farmers' clips. These are brought to the town on the fair day, usually once per week, and it is bought in the public street, the highest bidder being the purchaser. It is paid for there and then and the fleeces deposited at a warehouse in the town. A sale is held once per month in Dublin and an occasional one in Belfast, but by far the bulk of the Irish clip is bought privately by merchants and dealers.

Below I give a list of leading English wool sales fixtures before 1916. In addition I give a portion of a representative catalogue of a sale held in the country, and the reader will see how farmers used to bring their clips to market and how same were sold:

LIST OF ENGLISH WOOL FAIRS.

June 16	Aylesbury.	July 7	Salisbury.
" 29	Cirencester.	" 8	Blandford.
" 29	Guildford	" 8	Hungerford.
" 30	Henley-on-Thames.	" 8	Newbury.
July 1	Reading.	" 10	Dorchester.
" 3	Andover.	" 11	Wallingford.
" 4	Basingstoke.	" 11	Devizes.
" 4	Alton.	" 12	Marlborough.
" 4	Chichester.	" 13	Barnham.
" 5	Winchester.	" 14	Lewes.
" 6	Neport (I.W.).	" 15	Rye, Sussex.
" 6	Swindon.	" 17	Ashford, Kent.
" 6	Wantage.	" 18	Canterbury.

THE STAFFORDSHIRE
ANNUAL GREAT
SALE OF WOOL
AT LICHFIELD,

On Friday, June 25th, 1915.

CATALOGUE
OF THE
ANNUAL SALE OF UPWARDS
OF
47,000 FLEECES
OF
Shropshire Down, Crossbred,
AND OTHER
WOOL,
AT THE

Smithfield and Horse Repository, Lichfield.

The Sheets will be opened and can be inspected from 7 a. m. to 12 noon on the day of Sale

BUSINESS AT 12-30 PROMPT.

Lunch to Buyers only (by ticket) from 11-30 to 12-30

WINTERTON & SONS,

HEAD OFFICE — ST. MARY'S CHAMBERS, LICHFIELD.

AUCTIONEERS.

CONDITIONS OF SALE.

I. — The highest bidder to be the purchaser; if any dispute arise, the lot shall be put up again and resold, or in case of one or more bidders, the Auctioneers reserve the right to declare the buyer. The Auctioneers reserve to themselves the right of refusing the biddings of any person, and of altering or withdrawing any lot or lots.

II. — One farthing per lb. shall be the lowest advance, and no bidding shall be retracted without permission from the Auctioneers, and in case of a dispute the decision of the Auctioneers shall be final and binding.

III. — The purchasers to give their names and places of abode to the clerk immediately on the fall of the hammer, and pay a deposit of 50 per cent before removal, and the balance before delivery if demanded.

IV. — No remarks made by the Auctioneers shall be construed as a warranty, the Auctioneers acting solely as agents between vendor and purchaser.

The statements contained in the catalogue are believed to be correct, but the Auctioneers do not guarantee same, and will not be responsible for misdescriptions of any sort. All the lots are previously exposed for examination by buyers and must be taken as they stand.

No allowance will be made for Grey Fleeces.

V. — The lots to be taken with all faults and errors of description, if any, and to be taken too at the respective weights as weighed by the Auctioneers. All sheets to be charged 10/- each, and bags 1/- each, the amount to be returned if sent in good condition, free of expense, within three months from the day of sale, to the Auctioneers. Drafts 2 lbs per cwt. will be allowed.

Any complaints must be reported to the Auctioneers within 10 days from day of Sale, after which time full settlement must be made, **and no allowances of any sort will be entertained.** This will be strictly adhered to.

VI. — Upon failure of complying with foregoing conditions the lots will be resold by public auction or private contract, and the deficiency, if any, and all expenses shall be recoverable from the defaulter at present sale, who shall have no claim from any surplus that may arise.

CATALOGUE

Buyers are respectfully requested NOT to mix the Wools.

SHROPSHIRE FLEECE WOOL,

UNLESS OTHERWISE STATED.

The following PRIZES will be offered by the Auctioneers:

	1st Prize.	2nd Prize.	3rd Prize.
	£ s d	£ s d	£ s d
CLASS I.—For the best Washed Clip of not less than 250 Fleeces, being the Clip of the Vendor's own Flock -	2 0 0	1 0 0	10 0
“ II.—For the best washed Clip of not less than 100 Fleeces, being the Clip of the Vendor's own Flock -	1 0 0	10 0	
“ III.—For the best washed Lot of over 300 Fleeces -	2 0 0	1 0 0	

Competitors cannot take a prize in more than one class.

Brick Shed No. 1.

Lot	Vendor	Sheets	Fleeces	Particulars	Price Obtained
1	Mr. A. Allsop.	1	17		19¾d
2	Mr. C. H. Bibbey.	1	19		19¾d
3	Mr. D. Brough.	1	30	25 tegs	19¾d
4	Mr. D. Clewley.	1 and 1 bag	63	25 tegs	20d
5	Mr. M. Derry.	1	30	half tegs	16d
6	Mr. R. Dawson.	2	85	10 crossbreds	17¾d
7	Messrs. J. & W. Johnson.	1	31	10 tegs	20d
8	Mr. W. Johnson, jun.	1	14	10 tegs	19¾d
9	Mr. J. Jackson, Armitage.	2	68		20d
10	Mr. R. Bostock.	1	52	30 crossbreds	17¾d
11	F. Gretton, Esq.	2	61	Portlands, 33 tegs	20d
12	Mr. Geo. Astley, Hamstall,	1	43	crossbreds, well washed	20d
13	Mr. E. Astley, Orgreave.	1	30	17 tegs	20d
14	Mr. John Astley.	1	43	Kerry Hill	19¾d
15	Mr. Geo. Astley, Longdon,	1	45	crossbreds	19½d

Brick Shed No. 2.

Lot	Vendor	Sheets	Fleeces	Particulars	Price Obtained
16	Mr. Edward Astley	1	35	unwashed	16¾d
17	Mr. Evan Astley	2	78	12 Kerry Hill	18¾d
18	Mr. S. Audinwood.....	1	45	25 tegs	20¼d
19	Mr. W. Rust.....	2	62	31 tegs	17d
20	Mrs. Stevenson.....	1	50		18d
21	Mr. Jas. Simkins.....	1	36	21 tegs	20¼d
22	Mrs. A. Slater.....	2	58	Shrop. and Kerry Hill, 31 tegs	20d
23	Mr. W. Simkins.....	1	25	10 crossbred, 6 tegs	18¾d
24	Mr. Geo. Timmis	1	40	4 tegs	20¼d
25	Mr. A. Basnett.....	2	51	12 tegs	19½d
26	Mrs. A. Batkin.....	2	50	20 tegs	19½d
27	Mr. E. J. Batkin	1	44	20 tegs	20d
28	Mr. Wm. Boston	1	40	30 tegs	20¼d
29	Mr. C. Lees.....	2	52	15 tegs	20¼d
30	Mr. T. D. Lees.....	1	32	18 tegs	20¼d
31	Mrs. Lakin	2	60	unwashed, 30 tegs	16¾d
32	Mr. S. P. Knight	2	48	8 tegs	20¼d
33	Capt. Meynell.....	2	77	Scotch, black and white	16¾d
34	Mrs. Keen	1	32		20d
35	Mr. George Kirk	1	31	2 tegs	20d
36	Brownhills Urban Council,	1	45	unwashed, 13 tegs	16d

[The above is a portion of the catalogue, which is too long for publication here; but so much of it is given to illustrate the completeness and care used in making it up. It is noticeable that while the complete catalogue offered comprises nearly one hundred lots, the lots are nearly all small, containing in one instance only twelve fleeces. The largest lot exhibited comprised four hundred and fifty, but the average was between one and two hundred.

In a following number of the Bulletin it is anticipated that Mr. Hollings will continue his story of the methods and practices of the English wool-growing industry.]

ACTIVE AND IDLE MACHINERY.

A PERIOD OF VERY FULL EMPLOYMENT—A MAXIMUM OF GOVERNMENT ORDERS.

ON the page following there appears a statistical presentation of the active and unemployed wool machinery in the United States for August 1, September 1, and October 1, 1917, with a statement of the amount and percentage of machinery employed on American army and navy orders. It shows very clearly how important this government employment has become, and how very large a proportion of the machinery of the entire industry is now engaged on military and naval fabrics. Thus, on October 1, 1917, 33.2 per cent of the woolen and 36.5 per cent of the worsted spinning spindles were thus employed, and 32.2 per cent of the looms wider than 50-inch reed space. Between civilian and government demands the proportion of idle machinery is now relatively very small, as will be seen by a study of the percentage records, dating from March 1, 1916.

For months to come it seems probable that the productive energies of the wool manufacturing industry will be utilized to quite as great a proportion as at present in the service of the government. Efforts to distribute this national business as widely as possible among the mills capable of undertaking it have manifestly been successful. When the first inquiry was made, on June 1, of machinery employed on war orders for the United States, replies showed that 157,953 woolen and 210,366 worsted spindles, with 5,696 broad and 217 narrow looms, were so employed. On October 1 no fewer than 421,474 woolen and 535,444 worsted spinning spindles, with 12,267 broad and 1,120 narrow looms, were designated as employed in this government business. As is noted elsewhere in the account of the work of the Joint Committee of Manufacturers coöperating with the War Industries Board of the Council of National Defense, the assistance of the wool manufacture has been duly appreciated and acknowledged by the national authorities.

ACTIVE AND IDLE MACHINERY IN THE WOOL MANUFACTURE, AUGUST, SEPTEMBER AND OCTOBER, 1917; WITH PERCENTAGES OF IDLE TO TOTAL AS REPORTED SINCE MARCH 1, 1916.

	Looms.			Sets Woolen Cards.	Worsted Combs.	Spinning Spindles.	
	Wider than 50 inch Reed Space.	Under 50 inch Reed Space.	Carpets and Rugs.			Wooleu.	Worsted.
AUGUST 1, 1917.							
In Operation . .	37,996	10,859	2,813	3,445	1,724	1,211,281	1,341,201
Idle	6,547	1,646	1,041	264	277	113,133	384,203
Total	44,543	12,505	3,854	3,709	2,001	1,324,414	1,725,404

SEPTEMBER 1, 1917.							
In Operation . .	35,373	11,139	2,044	4,560	1,701	1,192,133	1,430,161
Idle	5,848	1,984	819	263	266	91,632	252,541
Total	41,216	13,123	2,863	4,823	1,967	1,283,765	1,682,702

OCTOBER 1, 1917.							
In Operation . .	38,127	12,197	2,060	3,597	1,793	1,270,609	1,468,289
Idle	5,012	1,681	852	230	225	100,434	241,839
Total	43,139	13,875	2,912	3,827	2,018	1,371,043	1,710,128

DATE. Machinery Employed on American War Orders.

June 1, 1917 . .	5,696	217	. . . .	517	231	157,953	210,366
July 2, " . . .	8,249	1,219	. . . .	958	274	306,343	274,944
Aug. 1, " . . .	10,873	843	. . . .	1,107	369	405,461	355,304
Sept. 1, " . . .	11,432	908	. . . .	1,228	359	415,991	412,080
Oct. 1, " . . .	12,267	1,120	84	1,206	485	421,474	535,444

Percentage on War Orders to Total in Operation.

Aug. 1, 1917 . .	28.6	7.8	. . . .	32.1	21.4	33.5	28.5
Sept. 1, " . . .	32.3	8.8	. . . .	26.9	21.1	35.	29.
Oct. 1, " . . .	32.2	9.2	. . . .	33.5	27.	33.2	36.5

Percentage of Idle Machinery to Total Reported.

Oct. 1, 1917 . .	11.6	12.1	. . . .	6.	11.1	7.4	14.1
Sept. 1, " . . .	14.2	15.1	. . . .	5.5	13.5	7.1	15.
Aug. 1, " . . .	14.7	13.2	. . . .	7.1	13.8	8.5	22.3
July 2, " . . .	15.2	11.	. . . .	19.3	5.6	10.9	19.1
June 1, " . . .	10.3	11.3	. . . .	17.7	5.6	12.9	10.9
March 1, " . . .	13.4	7.9	. . . .	16.1	6.2	8.1	11.8
Dec. 1, 1916 . .	12.8	9.4	. . . .	19.7	8.3	9.2	9.7
Sept. 1, " . . .	18.	10.6	. . . .	26.	10.9	12.9	10.8
June 1, " . . .	13.9	6.7	. . . .	17.6	12.7	10.	9.8
March 1, " . . .	12.1	7.7	. . . .	17.1	7.3	7.9	7.9

THE FALLING OF BRITISH FREE TRADE.

A SYSTEM, NEVER FULLY BELIEVED IN, THAT BROKE WITH
THE SHOCK OF THE WAR.

By ROLAND RINGWALT.

CARDINAL NEWMAN begins his "Grammar of Assent" by stating that propositions may take the interrogative, the conditional, or the categorical form. His illustrations are, "Does free trade benefit the poorer classes?" "Free trade therefore benefits the poorer classes," and "Free trade does benefit the poorer classes." Shortly after he repeats his thought, and refers to the three mental acts of doubt, inference, and assent. "To doubt, for instance, is not to see one's way to hold that free trade is or that it is not a benefit; to infer is to hold on sufficient grounds that free trade may, must, or should be a benefit; to assent to the proposition is to hold that free trade is a benefit."

Nearly a generation and a half has run its course since Newman wrote these words. Last year the labor unionists of Great Britain declared that free trade does not benefit the wage-earner. The British ministry has thrown overboard every vestige and pretense of free trade. Newspapers are beginning to point out the very passages in Adam Smith which protectionists always quoted and which free traders have usually ignored. If to-day a man of Newman's dialectic skill and power of illustration were to begin a treatise he would not find "Does free trade benefit the poorer classes?" an open question in Germany or Russia. No one would claim that it was so regarded in France or Italy. On this side of the ocean the glassblowers at Atlantic City demand protection as necessary to the maintenance of union wages, and the party which declares protection unconstitutional formally enacts that we must have it on dyestuffs.

If there ever was a time in which a nation could safely try the free trade experiment it was 1846, and if there ever

was a country to make the venture it was the Great Britain of Sir Robert Peel's day. All looked well. The wage-earners and their employers believed that free trade would mean cheaper food. In many parts of the world industry was so inchoate that British ships had no apparent cause to dread foreign competition. Five centuries of rigid protection had built up a line of factories that seemed impregnable. Under the Act of Navigation which Adam Smith deemed "the wisest of all the commercial regulations of England" there had grown up a merchant fleet without its peer on the waters, and wherever it went there was a mighty navy to guard it. An era of railroad building was setting in, and the tight little island was in a position to profit more than any other European country by the new methods of transportation. Soon the mines of Australia were to pour into England millions upon millions of gold. The brewery which, to Samuel Johnson,¹ represented "wealth beyond the dreams of avarice," was a sixpenny affair beside two or three large cargoes from Melbourne.

Yet thousands of Americans who know how the circumstances of the moment favored Peel's free trade policy do not know how shrewdly the campaign was managed. Parliament did put on the free list those manufactured products in which there seemed to be no possibility of foreign competition, but less developed industries were still guarded. Nor was there even the pretense that these duties were merely for revenue, or, as Randall Democrats would have said, for incidental protection. We have Sir Robert Peel's word for it that many of the imposts were "purely protective."

Seven years later further revisions of the British tariff were made, but even then Gladstone conceded that it was "prudent and proper" not to expose industry to the unbroken blast of free competition. So late as 1859 the revenue from customs duties was \$123,522,635. What we may fairly call British free trade really dates from 1861 and 1862, not from

¹ At the sale of a brewery Samuel Johnson said: "We are not here to sell a number of vats and casks but the possibility of wealth beyond the dreams of avarice."

1846. Beyond doubt the manufacturers of 1846 saw the drift; still in fifteen years much can be done, and much was done. The oft-quoted statement, "England adopted free trade in 1846," should be revised thus: "In 1846 England began to adopt free trade on the instalment plan." However, free trade writers gloss over this as they gloss over the £169,000,000 of gold that came from the antipodes.

Chemistry, electricity, new machinery, shipping, coal and iron mines, and railroads helped forward British trade, and the low tariffs of other countries opened to England markets she was quick to seize. But all her commercial gains are put down to free trade. Gladstone says that from 1854 to 1870 British commerce expanded "by leaps and bounds."

Yet Lord George Bentinck declared before the free trade policy was launched that it would transfer profits "from Englishmen, from Scotchmen, and from Irishmen, to Americans, to Frenchmen, to Russians, to Poles, to Prussians, and to Germans." There were farmers who saw how the new policy affected them. Statesmen like Disraeli and the Marquis of Granby spoke out in words of warning. Clergymen like Charles Kingsley recognized the evil that underlay these fine words. Aytoun, the poet of the Cavaliers, sought to save British agriculture. The humbug philanthropy of the measure has not often been shown up better than by Mrs. Trollope, the mother of two able novelists, and herself a writer of varied talent. All the boasting over free trade's magnificent success could not hide the fact that skilled artisans were going to Australia or to the United States. There were always some who turned from orations on the resistless march of commercial freedom to the blunt saying of Admiral Close or a like-minded seaman, "In case of war with a first-class power how can we defend the food imports we must have?" A skirmish with Afghans, a cruise after Malayan pirates, even a struggle with Maoris did not jeopardize English food commerce; nevertheless, the words were now and then quoted.

Cobden's forecast that the whole world would adopt free trade did not long hold back protection in the United States

nor overturn it in France. Russia saw the strength of the great principle. Bismarck led Germany in the same path. The colonies of Great Britain began to prefer the mother country's old practice to her young theory, and then at last came the fearful war between a nation which had abandoned her farmers and her artisans on the one side, and a nation which had protected every native industry on the other.

All the pleas and pretexts of free trade have gone down under the strain of war. Cardinal Manning used to express an abstract preference for the Cobden ideal, yet he feared that it would not last. Who, however, would have looked for so complete a surrender with such feeble excuses? There were a few make-believe utterances. It was said that England would not abandon free trade, that she would merely guard her markets against Germany, yet no one believes that now. If the wage-earners force Parliament to guard them against fabrics "made in Germany," they will insist on protection against French or Italian wares, against goods from Switzerland or the Low Countries. The trades unionists are in no mood to be put off with promises, they are going to insist on performance, and from London to Land's End that is known.

During last year's presidential campaign we had Republican speakers and writers who gave three-fourths of their energy to assailing the Executive, and never pressed home the great issue of the struggle. There were scores of Republican papers that never mentioned the Middleton report, that document drawn up by an official of the British government, which points out what Germany has done and Great Britain has failed to do for agriculture. "How not to do it" was the taunt of Dickens, and Great Britain has found out how not to help the farmer, while the German policy encouraged the farmer to do his utmost, whether in the years of the fat or of the lean kine. Mr. Middleton told all this with the plainness of an Englishman who means to be read and understood from Aberdeen to Adelaide, who looks to readers in Montreal and Madras. The fearful pressure of war, the menace of the submarine, have converted thousands of once

idle acres into grain fields, and the laborers in them wonder if England will ever again desert agriculture as she has done.

Submarines have destroyed cargoes, and bombs have fallen from the sky, but no serious invasion has befallen England. The dullest boy in the streets of London knows why. A gigantic fleet has blockaded the Germans, as the fleet of Nelson kept off the French and the Spaniards, and that fleet is mighty because it was built and armed in the old-time spirit of protection. Great Britain's steel walls of to-day like her wooden walls of long ago were built in British dockyards, made of British materials, shaped by British hands. They were not the children of free trade, they were the offspring of protection. Farmers and cutlers, shoemakers and potters might be sacrificed to the new political economy, but the navy wanted the best work and the best workmen the island could furnish. Nothing was too good for the flag that had "braved a thousand years the battle and the breeze." It is because Great Britain has never abandoned protection on the water, because she has guarded her fleet, because she has encouraged her merchant marine, that she has borne these three dreadful years.

In Manchester and Birmingham one can get a blunt answer to the question, "Does free trade benefit the poorer classes?"

Obituary.

HORATIO COLONY.

ONE of the veteran wool manufacturers of New England, Mr. Horatio Colony, of the Faulkner & Colony Manufacturing Company of Keene, N.H., and president of the Cheshire Mills of Harrisville, N.H., died on Sunday, November 11, 1917, from injuries sustained in a sad automobile accident. The car in which Mr. Colony was riding broke through a bridge rail, and the fall and the shock were almost immediately fatal. Mr. Colony was a native of Keene, eighty-two years of age, and a member of one of the most notable families of that part of New Hampshire. He was admitted to the practice of law in 1860, but became interested a few years later in the woolen mills of the Faulkner & Colony Manufacturing Company, and pursued that business with ability and success throughout his life. He was regarded as one of the most sagacious of New Hampshire's business men and was active in political as well as in mercantile and financial affairs. His fellow-citizens conspicuously honored him in 1874, when Keene was chartered as a city and Mr. Colony was elected the first mayor, serving two successful terms. Through the Faulkner & Colony Manufacturing Company Mr. Colony was a member of the National Association of Wool Manufacturers.

EDWIN C. PINNEY.

MR. EDWIN C. PINNEY of Stafford Springs, Conn., died at the Massachusetts Homœopathic Hospital in Boston, on September 14, at the age of seventy-seven. Throughout his active business career Mr. Pinney had been identified with the wool manufacture in Stafford. He proved a sagacious and successful manager of the Phoenix Woolen Company, in which he held a controlling interest, having become agent in 1887 and later president. Mr. Pinney was a citizen of notable public spirit. He had represented Stafford in the lower house of the Connecticut Legislature and had served as State Senator for one term. In addition Mr. Pinney had held local public offices. He was president of

the Stafford Springs Savings Bank and a director of the National Bank of Stafford, and also president of the Stafford Water Power Company and the Stafford Springs Electric Light Company. In his religious faith Mr. Pinney was an earnest Universalist, one of the prominent laymen of that denomination in his State. He had been for twenty-five years superintendent of the Sunday School of the Universalist Church in Stafford and long a deacon and trustee. He was actively interested in public education and efficient local government. His career had been one of untiring industry, and he is keenly missed by a great number of friends.

THOMAS BAILEY DRAPER.

MR. THOMAS BAILEY DRAPER, the senior member of Draper Brothers of Canton, Mass., who died recently, was an able and successful manufacturer, highly regarded by his colleagues in trade. He was a native of Melbourne, England, and his forebears had been in the woolen trade for many years, but from childhood his home had been in the United States. Besides being an active manufacturer, Mr. Draper was a public-spirited citizen, and had long been identified with the Unitarian Society in Canton and with the affairs of the town and the vicinity. Mr. Draper's wife was Miss Sarah Sumner, a member of an old-time Canton family. She survives him, as do three sons and two daughters. One of the sons is Mr. J. Sumner Draper, conspicuous in the real estate business of Boston, and formerly the president of the Boston Real Estate Exchange. Another son, Mr. Edward Draper, has important lumber interests in Maine, and the third son, Mr. Alfred Draper, is associated with the manufacturing business in Canton.

Editorial and Industrial Miscellany.

PROTECTION AND SELF-DEFENCE.

HOW WHAT THE NATION MADE POSSIBLE SERVES THE NATION NOW.

IN other pages of this Bulletin there is presented a summary of the work recently performed by the Joint Committee of Wool Manufacturers, which has been coöperating with the Council of National Defense and the purchasing officials of the government in Washington. Before the United States engaged in the war the production of wool fabrics — shirtings, uniform cloths, overcoatings, and blankets — for the army and navy called for relatively little attention from American manufacturers, and made a small draft upon available supplies of raw materials. All that had then to be considered was the needs of 70,000 to 80,000 men in the regular army, 125,000 in the National Guard, and about 70,000 in the navy and Marine Corps, and the fabrics required were customarily furnished by a dozen or twenty firms and corporations out of the 1,000 wool manufacturing establishments in the United States. Now, with an army in all its branches of about 1,300,000 men, and a navy and Marine Corps, including 175,000 that must be equipped, not for peace, but for war, several hundred mills, embodying about one-third of the productive machinery of the industry, are engaged in this national service. The wool manufacture was quick to anticipate the emergency, for initial action for effective coöperation with the government through an accredited committee was taken early in February, and work had been begun before the actual declaration of war by the United States, in early April.

The Joint Committee, headed first by Colonel John P. Wood, and then, on the entrance of Colonel Wood into active military service, by Mr. Nathaniel Stevens, was appointed from the membership of the National Association of Wool Manufacturers and the American Association of Woolen and Worsted Manufacturers, and possessed from the first a thoroughly representative character. As such, it was promptly and officially recognized by the Council of National Defense, and has formed a part of the working war organization of the government.

When the Joint Committee began its labors there were two chief results to be accomplished. One was to arouse the active interest of the American wool manufacturers in general, so that each mill with the requisite equipment to make army or navy fabrics should do its part. The other was to provide that the fabrics should be made and sold at no more than a fair and reasonable profit. Both of these efforts were immediately successful. In a few weeks several hundred manufacturers had offered their machinery for government work; a stable and equitable range of maximum prices had been established. In one point the committee was disappointed, that the Council of National Defense was not prepared to accept the committee's recommendation that the government take over the entire raw wool supply of the country, with a view to checking an otherwise inevitable and great advance in values, but this was in part compensated for some weeks later on when the Council did authorize a special wool purchasing committee to buy and hold wools for fabrics required for the national service.

When the United States entered the war, American wool manufacturers were in the enjoyment of a large and buoyant civilian business, and had recently completed heavy orders for military goods from allied governments. Because of the great war, a period of high prosperity had succeeded several years of extreme depression. There was an apparent opportunity to secure profits fairly balancing the anxious half-decade of 1911-1915. But at the suggestion of the Joint Committee and in loyal recognition of the paramount need of the government, the wool manufacturers of the country who were in a position to fulfil army or navy orders promptly cancelled many advantageous civilian orders from their regular customers, and threw their skill and energy into the work of preparing the materials for the clothing of the soldiers and sailors of the new forces. It should be stated that by far the greater part of the manufacturing clothiers, the tailors, and other customers of the mills, so unexpectedly disappointed in their own calculations of a lucrative business, took the situation in good faith and thus helped the mills to do their duty.

The requirements of a great army and an increased navy made heavy new demands upon supplies of raw wool already impaired by the war and inadequate without careful husbanding for both military and civilian uses. Recognizing this early, the wool

manufacturers of the country began to economize in new wools wherever possible, and when later the Council of National Defense and the Commercial Economy Board called upon the mills for further help in this direction, a special Manufacturers' Committee on Wool Conservation, with Mr. Franklin W. Hobbs as chairman, was created by the governing boards of the manufacturers' associations. This new committee prepared a definite program for a comprehensive treatment of the available wool supplies, called a large meeting of manufacturers and merchants in New York, and committed the entire industry to the conservation program.

In the face of many difficulties, not only as to raw wools, but as to dyestuffs, transportation, and labor, the wool manufacturers of the country, guided by their representative committees, have continued through the war summer and autumn, to do their utmost to meet their obligations to the nation. Ways and means have been outlined by the committees, and principles and methods of procedure have been so well established that, except in the working out of current details, the task of the original committees which have given so generously of their time and efforts has been substantially completed. This brief record is submitted, not in any mere spirit of self-satisfaction—for like other and similar undertakings in the sudden haste of war preparations, too long deferred, this of the wool manufacture has been by no means perfect—but because it has been and is a matter of duty to present the current activities of our industry in the volumes of the Bulletin.

During the greater part of a half-century the laws of the United States have sought to protect and foster the American wool manufacture, with other great national interests, in order to secure the convenience and comfort of the people in time of peace, and to contribute to the national power of self-reliance and self-defence in time of war. Now war has brought the supreme test, and it is with a thoroughly genuine and justifiable pride of calling as well as pride of country that the assembled wool manufacturers and merchants heard that official of the government best qualified to speak with direct knowledge declare in New York the other day:

"From my intimate connection with the woolen industry for the past seven months, I can frankly say that I have not been in contact with any industry that has met the situation as finely and openly as the woolen industry has done."

HOW CLOTH IMPORTS STAND.

RELATIVELY LARGE SHIPMENTS CONTINUING FROM THE UNITED KINGDOM, EVEN IN WAR.

It is interesting to look back over the imports of wool cloths into the United States in the peace years before August, 1914, and to compare them with the imports of the war years. However it may be with other commodities, the products of other industries, the great war has by no means proved to be "prohibitive" of the inflow of these wool fabrics from the looms of Europe.

In the fiscal years ending on June 30 of the two years immediately before the war, the gross imports of wool cloths were as follows:

	Pounds.	Value.
1912.....	4,119,110	\$4,630,478
1913.....	4,285,495	4,888,447

These do not vary greatly in amount from the average imports of cloths in the years immediately preceding. Before the war and before the enactment of the Simmons-Underwood tariff for revenue only, the United States was receiving between 4,000,000 and 5,000,000 pounds of foreign wool cloths every year and was paying for them, on a foreign valuation, between \$4,000,000 and \$5,000,000.

But on January 1, 1914, a very important change became effective. On that date worsted and woolen cloths were admitted to the United States at the new rate of duty established by the Simmons-Underwood tariff of October 13, 1913 — a rate of 35 per cent ad valorem. This was not a protective duty; the authors of the new law did not pretend that it was a protective duty — that it spanned the difference in the wage rate and other elements of the difference in cost of production between this country and foreign countries. The new duty was frankly imposed for purposes of revenue only, with the clear understanding that it would give foreign manufacturers the advantage in competition and greatly increase the imports of foreign wool goods. Then-Chairman Underwood of the Committee on Ways and Means of the House of Representatives estimated that the imports would be trebled — they were trebled in the very first months of the new law, while those foreign

manufacturers who had not before done business in this country were feeling their way and learning the needs and capacity of the American market. The gross imports of wool cloths in the fiscal years ending June 30, 1913, and June 30, 1914, compared as follows :

	Pounds.	Value.
1913.....	4,285,495	\$4,888,447
1914.....	12,385,586	12,794,048

The new, reduced duties, it should be remembered, covered for the fiscal year 1914 only the last six months, from January to June inclusive. All of the heavy increase of importations occurred in this half-year period. Then, a month later, on August 1, 1914, came the great war. Germany's Atlantic steamship lines were cut off, and subsequently German sea exports were embargoed. Belgium's woolen mills were stopped, and presently most of the mills in the manufacturing North of France were eliminated also. Austria, too, lost the power to send woolen goods to the United States. Under these circumstances, the imports of wool cloths in the fiscal years ending June 30, 1914, and June 30, 1915, compared as follows :

	Pounds.	Value.
1914.....	12,385,586	\$12,794,048
1915.....	10,648,990	10,262,732

Under the conditions there was in the fiscal year 1915 a remarkably small decrease in importations. German cloths fell off in amount from 2,799,043 pounds to 1,197,788 pounds, and in value from \$3,065,853 to \$1,292,375, Belgian cloths in amount from 692,595 pounds to 625,352 pounds, and in value from \$812,390 to \$742,789, while British cloths increased somewhat in amount from 7,293,304 pounds to 8,296,895 pounds, and in value from \$7,039,442 to \$7,614,550. There was a slight increase in the imports from other countries. The continuing imports from Germany and Belgium in the fiscal year 1915 were, of course, due to goods early sent on their way and to the fact that the blockade of German goods had not yet become absolute.

But in the next fiscal year ending June 30, 1916, there came a substantial decrease of imports as compared with the year ending June 30, 1915, as follows :

	Pounds.	Value.
1915.....	10,648,990	\$10,262,732
1916.....	6,117,181	6,479,063

Of course in 1916 the receipts of wool cloths from Belgium and Germany had become only nominal, Belgian cloths falling off in amount from 625,352 pounds to 103,800 pounds and in value from \$742,789 to \$103,800, while German cloths fell off in amount from 1,197,750 pounds to 3,658 pounds, and in value from \$1,292,375 to \$2,696. Imports, even of British cloths, because of the diversion of labor to military service and the imperative military demands on British mills, decreased in amount from 8,296,991 pounds to 5,984,384 pounds, and in value from \$7,614,614 to \$6,318,424.

The gross imports of wool cloths from all countries in the fiscal years 1916 and 1917 compare as follows:

	Pounds.	Value.
1916.....	6,117,181	\$6,479,063
1917.....	6,055,032	7,494,082

In the fiscal year 1917 imports of wool cloths from Belgium were only 27,394 pounds, valued at \$33,706, while imports from Germany were nil. Imports of British wool cloths decreased in amount from 5,984,339 pounds to 5,000,942 pounds, but increased in value from \$6,318,424 to \$6,379,754.

To sum up — our imports of wool cloths from foreign countries as a whole have fallen to less than one-half of what they were under the new tariff for revenue only before the war began, because of the elimination of Germany, Belgium, Austria, and Northern France as competitors.

But Great Britain remains a very, very formidable competitor even under war conditions, sending into this country in the fiscal year 1917 5,000,942 pounds of wool cloths, or more than our entire imports from all countries in 1912 and 1913, under the Aldrich-Payne tariff for both revenue and protection.

Needs of the British mills for materials for export fabrics are being given the priority over all but military demands by the British government. British manufacturers are granted wool by their authorities, to make up into fabrics to be sold abroad when wool is denied them to make into goods for their own domestic market, for their own people. Though raw wool is on the free list in this country, it is being made available to British mills at prices substantially lower than to American manufacturers. Those American men who are habitually taught by their tailors that they should wear none but British cloths are still able to secure them from abroad.

But as to the lighter dress goods for women's and children's wear, it is another story, our imports of these fabrics having fallen from 8,000,010 pounds, valued at \$7,320,867 in 1915, to only 826,122 pounds, valued at \$1,183,472 in 1917 — or in square yards a decline from 29,542,723 to 3,329,425. In dress goods, France, not Great Britain, has historically been our principal competitor.

CONSERVING THE WOOL SUPPLY.

AN OBLIGATION ON FOREIGN AS WELL AS ON AMERICAN MANUFACTURERS.

WHEN officials in Washington asked American wool manufacturers the other day to conserve an inadequate wool supply, and to use cotton and other substitutes to the limit of practicality in the making of fabrics for civilian wear, the manufacturers promptly and loyally responded and pledged their honor that this should be done.

The task thus set is one of more difficulty than the uninstructed public may imagine. There are many technical manufacturing obstacles in the way of a larger use either of cotton or of reworked wools. The shortest fibers cannot be used in the machinery without a larger proportion of long fibers to "carry" them. Worsted mills cannot employ reworked wools at all, and if worsted mills turned generally to cotton warps in their fabrics a sufficient supply of suitable cotton yarns could not be manufactured. Many worsted mills have no facilities for the use of cotton. Many mills, both worsted and carded woolen, have by the patient endeavor of years, won a jealously cherished reputation for the manufacture of all-wool fabrics of the highest quality.

To urge these mills to utilize substitutes even in the emergency of a great war involves a demand for a considerable sacrifice of prestige not easily or quickly regained. And the gravest difficulty of all is that the competing wool manufacturers of Great Britain are not subject to the recommendations of the American government and not likely to be moved by any official or unofficial appeal from this side of the Atlantic Ocean.

Even in this time of war, the manufacturers of Huddersfield, Leeds, and Bradford are regularly sending a large quantity of

their choicest cloths to the United States — 5,000,000 pounds in the past fiscal twelvemonth, or enough to furnish a suit apiece for 1,500,000 Americans. These British exports to this country are much less, of course, than under the reduced duties of the present tariff for revenue only in the early part of 1914, before the war began, but they are substantially equal to the average importations of protective tariff years before 1914. Though the British wool manufacture as a whole utilizes immense quantities of cotton and reworked wool — nearly three times as much reworked wool, it is estimated, as the American wool manufacture — these importations into the United States are as a rule of the best quality of British production.

Now obviously, if restrictions on the use of new wool are to be placed upon American manufacturers and not upon British manufacturers, the best of whose fabrics compete directly and closely with the products of American mills, a very great advantage will be given to the British mills over their American competitors. There can be no question that in a case like this a protectionist Administration and a protectionist Congress would promptly right this injustice by imposing a higher rate of duty upon imported woolen goods, thus enabling American manufacturers to continue to compete upon terms something like equality. In other words, a protectionist Administration and Congress would quickly see that their country had fair play, and that if national exigencies required American woolen mills to make a sacrifice they should not be required to make this in a way that would destroy their trade for the benefit of foreigners. What course will now be pursued by the present government in Washington, there will be many curious to see.

More and more up to 1914 the all-wool goods business and the finer elements of that business had come to be supplied by American manufacturers. More and more the high-grade jobbing houses selling cloths to the high-grade tailors have been finding that it was possible and advantageous to secure their supplies in the United States. Imports of British and other woolen fabrics had been stationary or decreasing in the years before 1914, though there was a constant increase in the demand for fine and fancy cloths in the American market. Not a few importing houses had come to award the palm of superiority to American mills in all but small lines of costly, "exclusive" fabrics.

Public opinion recognizes it as essentially, profoundly unjust when American citizens have volunteered for the national service, and foreigners with no sense of patriotism have calmly stepped into their business or employment. This has inspired a formidable popular movement for the conscription of alien "slackers," who were profiting from the loyal devotion of Americans.

Here is substantially a parallel case—American wool manufacturers have been asked to reduce their use of new wool and increase their use of cotton and other substitutes, so that a threatened famine may be averted, and there may be sufficient wool available for the army and navy of the United States. These manufacturers promptly respond, but find their markets taken away from them by foreign manufacturers, who are subject to no such restrictions, and have access to large supplies of wool denied, or granted with great difficulty and delay, to American mills.

It goes without saying that President McKinley would not have permitted such a wrong to be done to his fellow countrymen, or President Roosevelt or President Taft—nor is it probable that when the facts are made known, such a wrong will be allowed by any American Executive.

MORE WOOL IN SIGHT.

AN INCREASED AUSTRALIAN SUPPLY ASSURED—THE MORE SHEEP—MORE WOOL MOVEMENT IN AMERICA.

It was good news which reached the wool merchants and manufacturers of the United States early in October through the Committee on Wool Supplies, of which Messrs. Jacob F. Brown, Frederic S. Clark, and Stephen O. Metcalf are members, that there was satisfactory assurance that this country would receive at least 270,000 bales of Australian wool and 25,000 bales of East India wool in addition. It was further stated that the wool to be shipped would comprise the 45,000 bales of Australian wool for sale by auction, promised some time before, 25,000 bales of Australian wool for navy purposes and 200,000 bales of Australian wool for government use—exclusive of the 25,000 bales of East India wool awaiting shipment at Karachi. It is understood that the Committee on Wool Supply of the Council of

National Defense will have the handling of the 200,000 bales of wool released to our government. Mr. Frank Windeler of London, well known to the American wool trade, has come to Boston to arrange for the disposal of the 45,000 bales of wool owned and released by the British government, already on the way to the United States.

The total amount of 295,000 bales represents about 95,000,000 pounds of wool. As to the 45,000 bales that are first to come, Mr. Windeler states that they are desirable materials — not poor and burry stock. Our total imports of Class I. wools from Australia in the calendar year ending December 31, 1915, were 101,929,674 pounds. In the calendar year ending December 31, 1916, the imports were 115,354,523 pounds.

Earnest representations had been made through the Textile Alliance, Inc., through the Department of Commerce and through the Council of National Defense in Washington, that America as an ally was entitled to receive large quantities of British-Colonial wool through the lifting of the embargoes. The subject had been presented by a committee jointly representing the National Association of Wool Manufacturers and the American Association of Woolen and Worsted Manufacturers, and the facts in the case had been communicated to the British authorities in London. A further delay in the release of British-Colonial wools would have produced very grave disappointment in this country.

British tonnage has been made available for the first 45,000 bales of Australian wool. For the rest, transportation will have to be arranged by the United States government. In this time of stress, steam steel tonnage, usually employed for the freighting of wool, is not absolutely necessary. For wools brought from Australia across the Pacific Ocean to our Western seaboard wooden sail and auxiliary vessels of a good class can be employed. Since the opening of the war American shipyards on our Pacific coast have been very active in the construction of heavily-built wooden schooners, many of which go out to Australia with lumber and return with coal freights or without cargo. These vessels are not adapted, or likely to be required, for the North Atlantic trade or for voyages through the war zone. Most of them will presumably remain within the Pacific Ocean, though the auxiliary vessels are capable of coming from Australia through the Panama Canal to Boston, New York, or Philadelphia.

It is probable that the United States Shipping Board can arrange for the use of tonnage of this character without any effect on the North Atlantic steamship situation, and without reducing the tonnage fit and available for conveying supplies to our increasing army in France.

But the one impressive lesson of all this is that the United States ought not to remain dependent upon foreign lands for more than one-half of the wools required for the 1,000 woolen mills of the United States. In peace or war the British government and British manufacturers have naturally the first call upon the clips of Australia, New Zealand, India, and the Cape. Hereafter it may be taken for granted that their needs will be met first and foremost. Therefore the completion of the organization of the American More Sheep-More Wool Association, under the leadership of Mr. A. C. Bigelow of Philadelphia, is a very gratifying announcement. This association, in which the manufacturers and the Boston and Philadelphia wool trades are represented, will take over the encouragement of wool growing in the Eastern portion of the country, leaving the Mississippi Valley and the Rocky Mountain areas to a similar organization formed in the West, with Chicago as its headquarters.

There is imperative need of the earliest possible increase of the American wool clip both West and East, and there is unmistakably profit in the business. The Federal government and the State governments, through their agricultural departments, can do much to put the breeding of sheep and the growing of wool upon a substantial and profitable basis. There has come to be a far better appreciation of the value of sheep as a source of food as well as of materials for clothing and floor covering, and hereafter their flocks should yield to farmers and ranchmen a profit comparable with the gains from stockraising and agriculture in general.

It is very much to the direct interest of manufacturers to encourage in every possible way the More Sheep and More Wool movement in America. Without a very large American wool supply the development of the manufacturing industry cannot continue. Whether in peace or in war, the United States cannot afford to go, hat in hand, begging its wool supply from other governments, particularly from the governments of sharp competitors in manufacturing.

OUR ONE TRIAL OF FREE TRADE.

OCEAN SHIPPING LEFT UNPROTECTED — AND WHAT IT IS
NOW COSTING THE UNITED STATES.

ONE fact which the great war is bringing home very forcibly to American manufacturers and merchants is that their business lies in constant peril because of the lack of a strong American merchant marine. It may have seemed all very well in peace to have foreign craft at hand to convey the exports and imports of the country, but at the first shots of the war off most of these foreign vessels flew to obey the commands and serve the needs of their own governments. The dislocation of American trade and industry, which ensued in the autumn of 1914 and the winter of 1914-1915, cost the country many hundreds of millions in the actual loss of commerce, and the exorbitant freight rates exacted by the shipowners of Europe and Japan for the use of the fraction of their tonnage which they grudgingly vouchsafed to the United States. Since then the ocean carrying situation has been somewhat bettered by the energy of our own shipbuilders and seamen, who have increased the proportion of our sea-borne trade conveyed in American vessels from a beggarly 8 per cent before the war to 14, 18, and 20 per cent. But even now for the bulk of our sea freighting we are dependent upon foreign bottoms, and the American fleet is being rapidly depleted by the imperative demands of our government for merchant ships as auxiliaries and transports since our own entrance into the world conflict.

In spite of the tremendous efforts of the reorganized Shipping Board, the famine of ships during this approaching winter and the spring and summer of 1918 will be grave indeed. Not for many months can the output of American shipyards, driven with feverish haste, even approximately offset the havoc of the submarines. This is being sharply impressed upon the wool manufacturers and merchants of the country by the extreme difficulty of securing ships to bring to our ports from Australia the 200,000 bales of wool released from embargo by the British government. For the first of these shipments British tonnage has been provided, but manifestly the United States cannot decently go on asking from Great Britain both wool and ships. American tonnage must be made available for the remainder of

the Australian supply, even if sail vessels have to be chartered for voyages to ports of our Pacific coast whence the wool can be brought overland. Though there are now numerous American steamers in the South American trade to the River Plate, and the facilities for importing our indispensable raw materials are far better than from Australia, yet even on the shorter route the sailings are likely to prove inadequate, as many of the American ships now in service will almost certainly be required by the Navy or the War Department.

It is no fault of the manufacturers and merchants that the United States was not possessed of a great fleet of merchant ships, sufficient shipyards, and a large force of merchant officers and seamen long before the war began. For many years the industrial and commercial interests of the country have been beseeching Congress to give to American ocean shipbuilding and navigation, national aid and encouragement equivalent to that bestowed upon other great national industries with such magnificent results. America has reserved her own coastwise trade to her own ships, and so managed to save enough shipyards and enough of the old national sea habit to rescue the country now from complete and irredeemable disaster. But shipbuilding for, and navigation in the overseas or foreign trade have not been protected. We have tried there our one and only free trade experiment, leaving the overseas carrying of our merchandise to the ships of foreign nations, because it was alleged that they could do it "more cheaply." This is now demonstrated to all men to have been the most colossal blunder in our economic experience.

The war, as has been said, found us with almost no overseas ships of our own, and with most of the foreign ships in our ports commandeered at once by their own governments. Manufacturers and merchants were unable for months to deliver their export products to customers in foreign lands, and even now are delivering these goods only at enormous cost and with ceaseless difficulties. But this is only one need of ships; there is also the need of bringing to our ports a great many essential materials of American manufacturing. Wool is a conspicuous example. Two-thirds of our supply has to be sought in foreign countries. If there are no ships — and just now American ships, owned and controlled in our own interests, are the only ships that can be depended on for such a service — American machinery will

have to shut down for lack of materials to work on, and the workers in the mills will lose their employment and their means of livelihood. It is always possible for a foreign government which monopolizes our means of ocean transportation to use that tonnage for the deliberate repression of American industry and commerce, as has been done by Japan in both the export and import trade of the Pacific.

Though the penalty is heavy and grievous for the national folly that so nearly killed our once splendid ocean shipping, the blame cannot be laid upon the business men of the United States. It is historically the agrarian interests of the South and West that have fought and defeated in Congress broad and enlightened legislation for the restoration of our merchant marine. That is the reason why our ocean shipping, alone left unprotected, has been well-nigh destroyed by subsidized or cheap-wage foreign competition. And what a stupendous price the country has paid and is paying for the shortsightedness of agrarian statesmanship! Freight steamers that could have been built before the war for \$50 or \$60 per ton of deadweight capacity are now costing the government, as built by the Shipping Board, \$150 or \$160 a ton — or even a higher figure. We are slowly — too slowly — securing a merchant marine, but at what a staggering price! Where it was estimated a decade ago that \$9,000,000 a year would subsidize our whole merchant marine into vigorous existence, the United States is now paying hundreds of millions — the most gigantic subsidies ever known.

CHANGES IN THE WEST RIDING.

WORLD-WIDE INFLUENCES OF THE TRANSITION FROM BROAD-CLOTHS TO FABRICS OF TO-DAY.

MANY a change has come over the West Riding of England, that most famous, perhaps, of the older wool manufacturing regions of the world. There is an area fifteen or twenty miles across, with the city of Bradford as its center, where there can be found, so the "Wool Record" avers, "practically the whole of the woollen and worsted trades which have made Great Britain what it is to-day as a textile manufacturing country." Within this territory there are several hundred mills. From Bradford to Huddersfield is only about a dozen miles of distance. Brad-

ford is distinctively the combing and worsted spinning community, while the name of Huddersfield is synonymous with "good fabrics made from wool."

The time was when the fine, smooth broadcloth was the staple fabric of this region. The "Wool Record" recalls hearing retired manufacturers "contrast the endless variety of goods which are being made for men's and women's wear compared with thirty or forty years ago, when broadcloth was the article for Sunday wear" — and this has been a good thing "for the interests of the wool trade of Australasia, South Africa, and other wool growing countries."

The "Wool Record" ventures the opinion "that if there had been no alteration in the present demand for woollen fabrics compared with twenty-five years ago, then South Australian wools would not have been so much appreciated as they are, simply because so much of the bulk of the merino grown to-day in that State would be totally unfitted for the production of the fine-faced broadcloths of a quarter of a century ago." "In those days the all-important factor in merino wool was quality, and manufacturers never considered wool too fine. Old woollen manufacturers wanted nothing coarser than 70's, while if it was 80's, or even 90's, it was even better. But those days have gone never to return, and there has been inaugurated a new era which has brought prosperity both to wool growers and manufacturers. We are certainly living in days of great change, and with them there has also come the demand for raw material as different in character as could be."

It was the worsted coatings that brought an extended demand for a somewhat different class of merino wool. "Instead of superfine wool of a staple of about one inch to one and one-half inches long, worsted coatings called for a much longer staple, with, if anything, a trifle less degree of fineness." "Of course, in the manufacture of worsted coatings wool must first be combed and then spun into yarn, this being a different principle of operation from the way in which the old broadcloths were made."

This brought Huddersfield into prominence, and though worsted coatings in turn have yielded somewhat to new developments, "goods of a worsted character have largely taken their place, and to-day worsted or Botany yarns are very largely employed in the production of fancy trouserings, coatings, and an endless variety of fancy fabrics, all of which are consumed at home and abroad."

PROTECTION AND THE WAR.

THE NATIONAL SPIRIT AND THE TARIFF — A MIGHTY
FACTOR FOR FINAL VICTORY.

It is announced in recent Washington dispatches that the new Tariff Commission is preparing to consider the best ways and means to "protect" — this is the word — to "protect" American industry from the "dumping" of foreign goods into this country after the war has ended. Thus early does heresy creep into the councils of the faithful. An economic tribunal numbering not one, or certainly not more than one member, who could even lamely qualify as a protectionist is already speaking in the language of the enemy. Has not protection of every kind and degree been solemnly condemned in successive political party platforms as iniquitous and unconstitutional? And what is protection against "dumping," but a particularly insidious interference with the sacred dogma of *laissez faire*? Was it not long proclaimed that if foreign governments were willing to subsidize their ships for overseas trade it was a good thing for us to let them do so, because we got the advantage of "cheap" carrying? And if foreign manufacturers are ready to "dump" their goods into our markets and sell them at low prices here, why not permit our people to avail themselves of all of the benefits of such an international bargain counter?

Responsibility — especially official responsibility — has often been known to exercise a marked sobering and enlightening effect. Is it possible that experience is exerting a similar influence upon President Wilson's Tariff Commission? From protection against "dumping" to protection against the "unfair" competition of any kind of foreign goods produced by cheaper wages and longer hours of labor than are customary or possible in the United States is only a step, and not a very long one. The present administration was originally for a small army and a small navy, but under the pressure of the logic of events it has handsomely though reluctantly changed its mind. Far stranger things have happened than that before the close of this great war the political organization now controlling the government should be found frankly in favor of protection as an economic principle and a legislative policy.

This would not by any means require so violent a change as has already come over the government of the British Isles. As

the whole world knows, British statesmen, manufacturers, and people have been converted from almost complete free trade to stalwart protectionism since August 1, 1914. Relatively few of President Wilson's party lieutenants can be set down as unqualified free traders. Many even of the Southerners among them are at least "incidental" protectionists — as *vide* Angora goats, rice,^a and finally, sugar — and the Northerners as a rule, unless they are directly identified with the import trade, have been very restive at the idea of a tariff for revenue only.

The war has been a tremendous educative influence everywhere. It has suddenly illuminated to the Allies the wisdom of being as nearly as possible nationally self-contained and self-reliant. Germany had seen and recognized this truth more clearly and completely than France or Italy or England — and it came perilously near to being the ruin of Germany's enemies. The first great, significant conference of the allied governments — the Paris conference of a year ago — declared above all things for an economic protective league in the interest of national security and a lasting peace when this war has ended.

At all times, in all countries, the national spirit is the real, main, animating force of protective tariff legislation. That is why the patriots who won our independence and founded our government started the United States into life as distinctively a protectionist nation. That is why under Jefferson, Madison, Monroe, and Jackson that attitude was steadily maintained, and that is why when the national spirit was for the time gravely weakened by the sectional quarrel over slavery the historic American protective system was also weakened and practically set aside — to come back, however, with new vigor and emphasis in the great patriotic awakening signalized by the names and times of Lincoln and Grant.

Now, as never before in our history, the national spirit is welding the American people into one people. The war will make it increasingly difficult for artful demagogues to set class against class or section against section — and the free trade argument in the United States has been traditionally a class or a sectional argument. The same considerations of supreme regard for the national safety and the national welfare which have brought both British capital and British labor to demand the earliest practicable return to a protective system are sure to have a similar result among the whole American people — and

indeed a much quicker and more complete result, because there is here very much less pride of opinion to be overcome.

The steel industry in this country was long a particular target of anti-protectionist attack. Free traders savagely fought the increased duties on iron and steel products which were so wisely imposed under Lincoln for both revenue and protection in our Civil War. The free trade argument, urged with so much heat for many years, was that Europe could naturally produce iron and steel more cheaply than we could and, therefore, ought to be permitted to supply us with these articles, while we should continue to pay for them with our raw wheat and corn and cotton.

It seems incredible now that any men calling themselves Americans could have been so blind and foolish — but the colossal manufacturing development of America, not only in steel and iron, but in woollen goods and cotton goods and tools and machinery, was opposed with the utmost bitterness, particularly in the agricultural South and the agricultural West, and by a considerable part of the press of the principal importing cities where naturally foreign manufacturing and foreign shipping influences were very powerful. A further significant circumstance is that the elements in Congress and the press which were hostile to tariff encouragement of American manufacturing were also almost unanimously hostile to the maintenance of an adequate army, the strengthening of the navy, and restoration of the merchant marine.

It is not pleasant to imagine the situation of America of to-day if the country were dependent upon Europe for most of its steel and iron, its woollen goods and cotton goods, its tools, and its machinery. These are things which cannot now be procured from Europe in anything but insignificant quantities at any price — and if they could be had we have not the ships to bring them.

In spite of ill-informed and sinister opposition, the majority of the American people since Lincoln's time have been protectionists — as Lincoln was a protectionist and as Washington, Adams, Jefferson, Madison, Monroe, and Jackson were protectionists before him. They have believed, and insisted, that their own country should produce as much as possible of the articles which were essential to the national life and to the national security. Under the American system of protection the United States had become, before this war, by far the greatest manufacturing nation

in the world, producing of iron and steel particularly, more than Great Britain and Germany combined.

Now this gigantic industry is ready in our own country to make guns and shells and ships in such numbers that when our full development is reached, no foe can stand against them. The historians of the future, looking back, will count American iron and steel as fundamentally the great factor which won the world-war — and this is equivalent to a declaration that American protection won it.

A GRAPHIC DYESTUFF STORY.

A FAIR portrayal of the present dyestuff situation in this country, giving credit for the immense amount of good work performed and noting where there are still deficiencies, is this from "The Little Journal," published by Arthur D. Little, Inc., of Boston:

"A lady bought some Turkey red cotton goods for sofa cushions for her country house. They smeared her whole establishment with pink. 'American-made dyes,' said she, 'are dreadful.' Another bought a figured dress of cotton goods and had it washed. Alas and alack! The colors ran like so many race horses. Now the dyestuffs were probably made in America, and they were perfectly good colors for the purposes for which they were designed. The trouble was the wrong dyestuffs were used, and the reason why they were used was because the right colors for these particular purposes are not made here as yet.

"If you will be good enough to read along to the end of this chapter, we shall try to explain the situation. But remember, please, while reading, that the mills are running instead of being shut down, as they were in 1914, and that we are already getting the majority of the colors needed, made in America.

"Let's hark back to the dyestuff census that was printed after much gnashing of teeth by the U.S. Government in 1916. It contained a list of all the dyes imported in 1913. There were a great many repetitions in it because different makers had different names for similar products. Then, too, different dyes were often mixed together in Germany to attain certain shades, and new names applied to the mixtures. The use of special labels

for different customers was also a frequent practice among dealers and agents.

"Before the war there were five concerns making synthetic dyestuffs in the United States. Now, aside from twenty-three concerns producing crudes, or the first fruits of coal tar, as we might call them (and these do not include the retort coke oven plants or phenol makers), and sixty-eight makers of the intermediate materials, there are ninety-eight concerns making finished dyes. They are not wholly devoted to making these products; some began to make certain specialties otherwise unobtainable for their own use, and now they produce for the market, others confine themselves to one or two colors, and still others are only starting up. On the other hand, some are vast concerns, working intensely with rare talent and skill and rapidly enlarging their capacity and variety of product.

"Roughly speaking, seventy-five per cent of the dyestuffs needed are made in this country, and of this three-quarters some are made in such excess that a considerable export trade is carried on to friendly countries, especially to England. Of others there is a shortage, and this is serious in such basic colors as magenta, methylene blue, auramine, methyl violet, and a few more. The prices of many of them are 'way up in the air, which has lured into the business a number of minor concerns in which the art is lacking to secure adequate yields. Some also are under incomplete chemical control and they fail to purify their materials properly. This is incidental to pressing need and hasty establishment, which the whip of time will correct. On the other hand, the very highest praise should be awarded to the conscientious manufacturers who have strained every nerve to meet the country's needs, often at the expense of profit.

"We have, then, three-quarters of the dyestuffs needed, some a-plenty, and others scarce. In regard to quality, American-made dyes are the same as German dyes, only there are not so many of them. If some small makers are still short in their yields, the loss is theirs. If they do not purify their materials enough, the defect is more likely to be in shade than in fastness. This is a complete catalogue of the defects of American-made dyes and it does not apply to the products of the important makers. Nevertheless, dyers have been sorely put to it. They have had to use one material when they wanted another, and the substitutions have often been unhappy. They have also been

compelled to relearn the art of using dyewoods for many purposes which are new to the present generation, and this is not to be learned in a day. The trouble, however, has principally come from the make-shift substitution of wrong materials for the right ones, because the right ones are lacking. The colors themselves are the standard articles, whether made in Germany, France, Switzerland, England, or here. And missing and scarce products are coming upon the market as agreeable surprises at short intervals.

"In regard to the missing quarter, Congress cut off from the Tariff Bill the *ad valorem* duty on indigo and alizarine products, which discouraged manufacturers at the start. Nevertheless indigo, of which many thousands of tons are required annually in this country, is now being made by the Dow Chemical Co. at Midland, Michigan, although at present there is not enough made and natural indigo imported to meet even the needs of the U.S. Navy. But The National Aniline & Chemical Co., Inc., is building a great indigo plant, and it is generally understood that the DuPont Chemical Co. is about to begin, so that with these great concerns engaged in it, the production of all the indigo we need is only a question of time. In chemical research they are the peers of the German establishments.

"Alizarine is Turkey red and is used for bandana handkerchiefs, towels, and print goods. Alizarine blue is employed in connection with indigo for navy blues and on serges, dress goods, and suitings. These are not produced yet, although the crude body from which they are made, anthracene, is now available, and one or two of the largest makers have the matter in hand. It is merely a question of time and organization.

"Fast cotton vat dyes of the Indanthrene type are still missing. These are for shirtings, dress goods, etc., and some are fast against light as well as bleach. Many are still protected by German patents. The research laboratories are busy and the outlook is hopeful. A good wool black of the 'Diamond' type is needed. Logwood is now used in the place of it, and this is not fast enough against light. There is also a shortage of safranines and the general class of azine colors, including azo carmine for red and pink on silk, and for printing, which a large print works in New England is beginning to make. Besides these, there is wanted a good developed black of the diamine or diazo type for a rich, full, bloomy black on fine cotton hosiery and

cotton-silk goods. These are the chief absentees, but by the time this is printed their number may be less.

"That is the situation at the end of three years. The number of colors produced to-day or the number of dyestuffs missing is not the important fact. In 1914 we had neither crudes nor intermediates to speak of. These are now abundant. We then made a bare one-fifth of our needs out of foreign materials; now we make three-quarters of those needed and some for export, all of American materials in American apparatus, and by American chemists. We have the talent, the organizations, the capital, and the will. The men in the business are familiar with the financial side of chemical problems; they also know what chemical research means. The coal-tar product industry is established in this country and it is here to stay. The missing quarter of the dyestuffs needed will soon be provided and it looks as though only the odds and ends would eventually come from abroad."

"NEW UNIFORMS FOR OLD."

HOW WORN CLOTHING FROM CAMPS AND BATTLEFIELDS IS BEING SALVED BY THE BRITISH GOVERNMENT.

BATLEY and Dewsbury may well have been trusted to see that old woolen fabrics and materials from the war zone were not allowed to go to waste. Under the control of the British War Department there has been evolved at Dewsbury a great establishment where discarded uniforms from British armies fighting over seas and from the training camps at home are thoroughly sorted and utilized to best advantage. These uniforms, condemned, are packed into sacks and sent from the war fronts to England. From the receiving points they are conveyed by rail directly into the three Dewsbury stations, which have been taken over by the ordnance authorities. From the trains the bales of clothing are run on hand cars directly to the sorting platforms, where 350 experienced women sorters open the bags and examine the contents, setting aside those garments fit for renovation and hurrying others to the rag merchants whose machinery shreds them apart and prepares them for being reborn into army cloth in the local factories.

It is stated in the "Yorkshire Post" that as many as 90 truck-loads of discarded military fabrics have been received at the Dewsbury stations in a single day. All garments capable of being restored are thoroughly cleansed in a dyeing and cleansing establishment of Dewsbury. Then these garments are repaired and reissued to the army or held for the use of German prisoners of war.

Rags, recovered, are classified, packed into bales and offered to purchasers. Labor-saving appliances are used wherever possible. These rags, as a rule, do not go out of the district, but are utilized there in the manufacture of new clothing, the great bulk of them being issued at fixed prices to local manufacturers engaged in the production of cloth or blankets for the troops. Prices are fixed by the Contract Department of the army — trousers being valued, for example, at £84 per ton and jackets at £74 per ton, as compared with a price exceeding £100 per ton for these materials when offered in the open market. Moreover, all the clippings from woolen fabrics that result from the manufacture of garments for the troops are returned from the clothing factories to Dewsbury and are also issued at fixed rates below market value, to manufacturers of army clothing — just as is now being done by the War Industries Board of the United States government. It is stated that thus far these sales to merchants and manufacturers in the heavy woolen district have amounted to over £1,000,000.

About 1,200 tons of rags are being received and distributed in Dewsbury every week. The work is admirably organized. All cotton rags are sent to the great arsenal at Woolwich for use "as wipers and cleaning rags, while cardigan jackets are repaired with tape taken from old puttees and darned with wool found in discarded 'housewives.' Among useful and valuable things recovered are leather patches from riding breeches and £500 worth of gold lace, while thousands of shirts have been cleaned and sent for use by German prisoners of war. All web equipment — belts, pouches, etc. — is sent back to ordnance depots for use, and thousands of towels are washed and issued again. Blue trousers are reserved for German prisoners. Woolen scarfs and belts are cleaned and prepared for sending out to the troops when cold weather comes along."

The magnitude of this undertaking and its success may be measured from the fact that at the Dewsbury stations there have

already been received about 45,000,000 separate articles, including 4,100,000 jackets, 4,500,000 pairs of trousers, 620,000 overcoats, 903,000 pairs of riding breeches, 2,700,000 puttees, 3,500,000 shirts, 856,000 caps, 1,800,000 cardigan jackets, 18,000,000 socks, and 2,700,000 pairs of drawers.

It goes without saying that this great renovation plan is proving highly profitable. The "Yorkshire Post" states that "With the very highest standard of efficiency and large turnover, the cost per article, including large repairs, is very low — about 1s. 1½d. — as compared with 9s. 6d., which represents the two-thirds value of a new one. If the garment were not salvaged, its value in the rag market would be about 1s. 6d. In this way £60,000 worth of uniforms, etc., have been saved up to the present in Dewsbury. In ten months the total value of produce received and disposed of at Dewsbury was £658,650, while the two-thirds value of garments recovered for reissue at all depots was £340,502, a total of £999,152, at a total expenditure, including enlisted men's pay, civilians' wages, cleaning and repair expenses, etc., of £67,308, showing a net credit balance of £931,844. At present the average disposal price is about £66 per ton, on an annual turnover of some £1,800,000."

These are economies which will undoubtedly be emulated by the United States authorities when large bodies of American soldiers have been sent overseas. The work will prove an important part of the national effort for wool conservation.

A METHOD FOR DETECTING DAMAGED WOOL.

THE twentieth century has brought with it a very careful study of the action of dyes and of alkalis on wool fiber, from the industrial point of view. However, it can hardly be said that much attention has been given to the chemistry of the wool fiber, from the view-point of the scientist. One of the more notable contributions to this subject has appeared at a time when most of us believed that Germans in their native land were engrossed with war problems. In 1916 K. von Allwoerden published in the *Zeitschrift fuer Angewandte Chemie* a very remarkable report on his investigations in this field. As a result of his researches he finds that there exists between the epidermal scales and the cells of the wool fiber, a substance which he has designated

"Elasticum," and he is of the opinion that the valuable properties of wool depend on this substance. He finds that Elasticum is a carbohydrate (a substance related to the sugars) and that it may be isolated in the following manner:

Take 500 grams of scoured wool, wet it in hot water, and steep it in a solution of caustic soda at room temperature for 24 hours. (Concentration 16 grams sodium hydroxide in 8,000 cubic centimeters water.) The Elasticum and some protein matter go into solution. The latter is separated preferably by dialysis. The solution of Elasticum is acidified with acetic acid, and evaporated down to a volume of 200 cubic centimeters on a water bath. Sodium acetate and phenylhydrazine are added, and the mixture is heated on the steam bath. After about one hour the osazone of Elasticum separates in the form of microscopic needles. Melting point = about 188° C. This substance is apparently identical with galact-osazone. After separation of the protein bodies, as indicated above, Elasticum will reduce Fehling solution. von Allwoerden found that the physical properties of wool noticed in fulling and finishing, and the chemical properties which it exhibits towards acids, depend on the presence of Elasticum. To determine whether Elasticum is present or absent, the fiber is placed under a microscope and treated with chlorine water, using a magnification of 200 diameters. The action of the chlorine on the Elasticum causes a swelling of the layer beneath the scales, and the edge of the fiber assumes the appearance of a row of perfect grains on an ear of corn. If the fiber has suffered from severe alkaline treatment in scouring, the thin hemispherical membrane bursts, the Elasticum is removed, and the edge of the fiber appears frayed. This is noticeable to a marked degree in the case of reclaimed wool (shoddy). In the case of dyed wool the Elasticum will appear almost colorless, while the fiber remains colored. Practical men know from experience that weak alkalis have a more harmful action than that exerted by weak acids. This then would be due to the loss of Elasticum in alkaline solutions, but damage to the fiber may occur in any one of the alkaline treatments, such as scouring, alkaline dyeing, fulling or soaping.

On further investigation of this subject Naumann found that the chlorine test varies with different varieties of wool. He noticed that the action of the reagent is different in different parts of the same fiber. For this reason it becomes necessary to

examine the whole fiber. (This can be done by placing the whole slide on a carriage and moving it gradually under the "objective" of the microscope.) He found that a normal wool fiber shows no Elasticum globules or spheres at the tip. A few isolated globules are noticed about 5 millimeters from the tip, and they increase in closeness as the root of the fiber is approached, until they form a continuous chain. The swellings are most regular at about the middle of the fiber. All varieties of wool show the reaction, but in some it is more evident than in others. Naumann examined a very coarse Australian wool. This showed no swellings from the tip to the middle of the fiber, and from there to the base only occasional globules were noticeable. Total length of the fiber was 114 millimeters.

A specimen of lambs' wool when examined showed no swellings at the tip, and only a few appeared near the base of the fiber. In the middle short chains of the globules were seen. In order to make the Elasticum reaction clearer, the wool should be first extracted with coal-tar benzene in a Soxhlet apparatus. If the wool has been dyed in a neutral sodium sulphate (glauber salt) bath, the Elasticum reaction cannot be observed. It was found that the action of caustic soda on Elasticum was more intense at high temperatures than it is at great concentrations. If the wool fiber is treated with caustic soda at 50° C. in concentrations such as that used in indigo-vat dyeing, the Elasticum is not destroyed. If wool is treated in a solution containing caustic soda and formaldehyde the Elasticum is not removed, although the same solution without the formaldehyde would act on the fiber very quickly. If no formaldehyde is used the yarn will suffer a shrinkage in length, and this was entirely prevented by the addition of the formaldehyde.

The micro-chemical examination of the wool fiber here presented opens up a profitable field for investigation. It would certainly be of great value to our wool buyers if we could by a fairly simple scientific method determine the "*fulling ability*" of a given wool.

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COMPARATIVE STATEMENT OF IMPORTS AND EXPORTS OF
WOOL AND MANUFACTURES OF WOOL FOR THE TWELVE
MONTHS ENDING JUNE 30, 1916 AND 1917.

GROSS IMPORTS.

ARTICLES AND COUNTRIES.	Quantities for Twelve Months ending June 30.		Values for Twelve Months ending June 30.	
	1916.	1917.	1916.	1917.
WOOL, HAIR OF THE CAMEL, GOAT, ALPACA, AND OTHER LIKE ANIMALS, AND MANUFACTURES OF:				
UNMANUFACTURED—				
Class 1—Clothing (free)	<i>Pounds.</i>	<i>Pounds.</i>		
Imported from—				
Belgium	30,188,711	1,555,182	\$9,352,194	\$902,576
United Kingdom	110,085,992	187,078,443	32,130,504	67,395,530
Argentina	8,941,506	33,304,462	3,206,191	14,753,234
Uruguay	157,433,859	802,618	45,183,065	293,422
Australia	16,697,578	262,352	5,696,236	114,127
New Zealand	79,773,939	56,478,444	16,577,467	18,044,052
Other countries				
Total	403,121,585	279,481,501	\$112,145,657	\$101,502,941
Class 2—Combing (free)				
Imported from—				
Turkey in Europe	4,135,963	56,400	\$1,487,258	\$28,200
United Kingdom	4,930,170	7,883,007	1,523,620	3,647,230
Canada	3,538,681	7,977,421	741,826	2,657,713
South America	687,346	1,139,125	164,004	390,594
Other countries				
Total	13,292,160	17,055,953	\$3,916,708	\$6,723,737
Class 3—Carpet (free)				
Imported from—				
Russian Empire	3,269,328		\$715,224	
United Kingdom	25,969,190	2,795,512	6,072,137	\$985,204
Other Europe	3,784,336	9,870,868	809,859	2,509,772
Argentina	14,670,272	13,075,173	3,218,590	5,131,379
China	44,192,310	25,448,769	9,476,354	6,487,390
East Indies	3,025,191	428,661	749,318	94,330
Turkey in Asia	42,560		8,557	
Other countries	14,315,812	14,053,683	2,905,397	4,606,311
Total	109,268,999	67,672,671	\$23,955,236	\$19,814,386
Hair of the Angora goat, etc. (dutiable)	9,145,278	8,162,093	\$2,403,133	\$3,096,106
Total unmanufactured	534,828,022	372,372,218	\$142,420,734	\$131,137,170
MANUFACTURES OF —				
Carpets and carpeting, etc.	<i>Sq. Yards</i>	<i>Sq. Yards.</i>		
Imported from—				
Turkey in Europe	761		\$4,446	
United Kingdom	378,943	365,480	1,099,227	\$1,213,122
Asia	323,087	664,029	1,071,108	2,405,935
Other countries	30,667	27,399	196,570	172,785
Total	733,458	956,908	\$2,371,351	\$3,791,842

344 NATIONAL ASSOCIATION OF WOOL MANUFACTURERS.

COMPARATIVE STATEMENT OF IMPORTS AND EXPORTS OF
WOOL, Etc.GROSS IMPORTS. — *Continued.*

ARTICLES AND COUNTRIES.	Quantities for Twelve Months ending June 30.		Values for Twelve Months ending June 30.	
	1916.	1917.	1916.	1917.
CLOTHS (dutiable)	<i>Pounds.</i>	<i>Pounds.</i>		
Imported from—				
Belgium	103,800	27,394	\$122,542	\$33,706
Germany	3,658	2,696	2,696	2,696
United Kingdom . .	5,984,339	5,000,942	6,318,424	6,379,754
Other countries . . .	25,384	1,026,696	35,402	1,080,622
Total	{ lbs. 6,117,181 sq. yds. 8,831,555 }	{ 6,055,032 8,212,495 }	\$6,479,063	\$7,494,082
DRESS GOODS, WOMEN'S AND CHILDREN'S (dutiable) —				
Imported from—				
France	23,195	24,161	\$40,410	\$51,636
Germany	3,570	102	4,221	306
United Kingdom . . .	1,585,870	764,086	1,662,970	1,078,378
Other countries . . .	78,624	37,773	95,279	53,152
Total	{ lbs. 1,691,259 sq. yds. 6,914,313 }	{ 826,122 3,329,425 }	\$1,805,880	\$1,183,472
Press cloths for oil milling purposes (free)			\$50,311	\$787
Tops, pounds (dutiable)	483,183	5,853	251,512	5,913
Wearing apparel (duti- able)			1,127,536	1,708,794
Wool wastes (free) . . .			1,207,517	1,668,333
Yarn, pounds (dutiable)	110,477	38,374	88,086	55,406
All other (dutiable) . .			602,952	1,068,618
Hair of the goat, etc., manufactures of (dut.),			1,673,029	1,885,216
Total manufact- ures of			\$15,657,537	\$18,862,463

COMPARATIVE STATEMENT OF IMPORTS AND EXPORTS OF
WOOL, ETC.—*Continued.*

EXPORTS OF WOOL AND MANUFACTURES OF.

FOREIGN.				
ARTICLES.	1916.	1917.	1916.	1917.
	Quantities.	Quantities.	Values.	Values.
WOOL, HAIR OF THE CAMEL, GOAT, ALPACA, AND OTHER LIKE ANIMALS, AND MANUFACTURES OF:				
UNMANUFACTURED—				
Wool of the sheep, hair of the goat, camel, and other like animals:				
Class 1—Clothing, lbs.	1,762,233	1,727,640	\$608,930	\$727,635
Class 2—Combing, “	7,700	102,734	3,980	32,120
Class 3—Carpet, “ . . . . .	.....	.....	.....	.....
Total (lbs.)	1,769,933	1,830,374	\$612,910	\$759,755
Hair of the Angora goat, alpaca, and other like animals, lbs. . .	33,637	.....	9,748	.....
Total unmanufactured	1,803,570	1,830,374	\$622,658	\$759,755
MANUFACTURES OF—				
Carpets and carpeting—				
Carpets and rugs woven whole, sq. yds.	7,498	2,210	\$28,554	\$39,338
All other, sq. yds.	560	2,004	1,418	3,038
Cloths:				
Lbs.	95,660	46,046	123,645	63,171
Sq. yds.	211,064	66,759		
Dress goods, women's and children's:				
Lbs.	119,945	34,550	118,712	49,479
Sq. yds.	467,520	95,588		
Press cloths of camel's hair, for oil rolling purposes . . . . .	.....	.....	8,277	.....
Tops, lbs.	87,616	.....	52,693	.....
Wearing apparel . . . . .	.....	.....	52,286	11,485
Wool wastes . . . . .	.....	.....	7,770	37,567
Yarn, lbs.	5,533	961	4,546	1,029
All other . . . . .	.....	.....	65,880	21,237
Hair of the Angora goat, alpaca, etc., manufactures of . . . .	.....	.....	13,037	14,998
Total manufactures of . . . .	.....	.....	\$476,818	\$241,342

COMPARATIVE STATEMENT OF IMPORTS AND EXPORTS OF
WOOL, Etc.EXPORTS OF WOOL AND MANUFACTURES OF. — *Concluded.*

DOMESTIC.				
ARTICLES.	1916.	1917.	1916.	1917.
	Quantities.	Quantities.	Values.	Values.
WOOL, AND MANUFACTURES OF:				
Unmanufactured, lbs.	2,148,350			\$1,230,296
Wearing apparel:				
Exported to —				
France			\$1,034,468	\$113,204
Italy			8,529,351	417,233
Russia in Europe			3,207,092	28,006
United Kingdom			726,826	53,475
Canada			2,093,764	2,579,443
Mexico			222,942	405,927
Russia in Asia			2,613,207	8,289
Other countries			940,851	846,681
Total wearing apparel			\$19,368,501	\$4,452,258
Woolen rags, lbs.	13,671,472		1,283,281	1,629,130
All other			33,331,873	12,342,168
Total			\$53,983,655	\$18,423,556

QUARTERLY REPORT OF THE BOSTON WOOL MARKET FOR
JULY, AUGUST, SEPTEMBER, 1917, AND SEPTEMBER, 1916.

DOMESTIC WOOLS. (F. NATHANIEL PERKINS.)

	1917.			1916.
	July.	August.	September.	September.
OHIO, PENNSYLVANIA, AND WEST VIRGINIA.*				
(WASHED.)				
XX and above				36 @ 37
X				33 @ 34
Blood				42 @ 43
"				43 @ 45
"				43 @ 45
Fine Delaine				39 @ 40
(UNWASHED.)				
Fine	57 @ 58	62 @ 64	65 @ 66	30 @ 31
Blood	71 @ 72	73 @ 75	76 @ 77	39 @ 40
"	74 @ 75	74 @ 75	76 @ 77	42
"	73 @ 74	74 @ 75	74 @ 75	40 @ 41
Fine Delaine	73 @ 74	74 @ 75	75 @ 76	36
MICHIGAN, WISCONSIN, NEW YORK, ETC.				
(UNWASHED.)				
Fine	56 @ 57	58 @ 60	60 @ 62	27 @ 28
Blood	69 @ 70	72 @ 73	74 @ 75	36 @ 37
"	73 @ 74	74 @ 75	75 @ 76	41 @ 42
"	72 @ 73	73 @ 74	73 @ 74	40 @ 41
Fine Delaine	71 @ 72	72 @ 74	73 @ 75	35½ @ 36
KENTUCKY AND INDIANA.				
(UNWASHED.)				
Blood	76 @ 77	77 @ 78	78 @ 79	44 @ 45
"	75 @ 76	76 @ 77	76 @ 77	44
Braid	56 @ 57	67 @ 68	67 @ 68	36 @ 37
MISSOURI, IOWA, AND ILLINOIS.				
(UNWASHED.)				
Blood	71 @ 72	72 @ 73	73 @ 74	40
"	70 @ 71	71 @ 72	72 @ 73	39 @ 40
Braid	55 @ 56	65 @ 66	65 @ 66	36 @ 37
TEXAS.				
(SCOURD BASIS.)				
12 months, fine, and fine medium . .	170 @ 175	165 @ 170	165 @ 175	82 @ 85
Spring, fine and fine medium	145 @ 150	145 @ 150	155 @ 160	70 @ 75
Fall, fine and fine medium	115 @ 120	115 @ 120	115 @ 120	60 @ 65
CALIFORNIA.				
(SCOURD BASIS.)				
12 months, fine	170 @ 175	170 @ 175	170 @ 175	82 @ 85
Spring, fine	140 @ 145	140 @ 145	155 @ 160	70 @ 72
Fall, fine	105 @ 110	105 @ 110	185 @ 140	57 @ 63
TERRITORY WOOL: Montana, Wyoming, Utah, Idaho, Oregon, etc.				
(SCOURD BASIS.)				
Staple, fine and fine medium	172 @ 175	175 @ 180	180 @ 182	88 @ 90
Clothing, fine and fine medium . . .	150 @ 160	165 @ 170	165 @ 170	80
Blood	160 @ 165	165 @ 170	170 @ 175	82
"	140 @ 142	140 @ 142	145 @ 150	78
"	125 @ 128	128 @ 132	132 @ 138	72
NEW MEXICO.				
(SCOURD BASIS.)				
No. 1	168 @ 170	168 @ 170	168 @ 170	78
No. 2	154 @ 155	158 @ 160	158 @ 160	70
No. 3	134 @ 135	138 @ 140	138 @ 140	60
GEORGIA AND SOUTHERN.				
Unwashed	68 @ 69	68 @ 69	70 @ 71	37 @ 38

* Ohio, Pennsylvania and West Virginia unwashed wools in small supply and prices nominal.

BOSTON, October 1, 1917.

DOMESTIC WOOLS.

The wool market during the first week of the quarter under review experienced a continuance of the quiet tone of the closing week in June.

Buying in the west was less marked as regards operations by eastern buyers, but local buyers in the various western wool sections continued their activity.

Sales of territory wools during July and August were somewhat retarded on account of the slowness of arrivals from the west.

The most important event in the trade during this period was the action of the wool merchants in Boston in unanimously voting to offer 50 per cent of their stocks of wool to the government at the current market prices as of July 30. A plan to carry into effect the sales to the government was promptly established under the direct care of Mr. Jacob F. Brown, Chairman of the Committee on Wool Supply of the Council of National Defense, coöperating with Mr. Frederic S. Clark, Vice-President of the National Association of Wool Manufacturers, and Mr. Stephen O. Metcalf, who represented the manufacturers; Mr. Robert H. Stevenson, Jr., volunteering his services as confidential secretary. Many other members of the trade patriotically tendered their services to coöperate to the fullest extent with the government representatives.

The plan as adopted has worked out most successfully, and has resulted in the government buying considerable quantities of wool at a fair price on a basis that has had the effect of establishing a stability of wool values throughout the country and preventing undue competitive buying.

During the close of the quarter the sales of territory wools showed a marked increase in volume with some stiffening of values, many of the sales being made in the original bag.

September closed with firm values and a steady, healthy demand.

F. NATHANIEL PERKINS.

PULLED WOOLS. (W. A. BLANCHARD.)

	1917.			1916.
	July.	August.	September.	September.
Extra, and Fine A	165 @ 175	165 @ 175	165 @ 180	75 @ 80
A Super	150 @ 160	155 @ 160	155 @ 160	70 @ 73
B Super	130 @ 140	140 @ 145	140 @ 145	67 @ 70
C Super	95 @ 105	100 @ 110	100 @ 115	53 @ 58
Fine Combing	150 @ 160	155 @ 165	160 @ 165	75 @ 80
Medium Combing	135 @ 145	140 @ 150	145 @ 150	70 @ 73
Low Combing	110 @ 120	115 @ 125	115 @ 125	63 @ 67

Boston, October 3, 1917.

PULLED WOOLS.

For the quarter pulled wools in the making have been confined to lambs' supers, mainly of B grade; and, while these have accumulated at times in pullers' hands, an active demand for all medium wools and a steadily advancing market have cleaned up the production month by month. Old lots of supers and fine A's have also been absorbed in the general demand for domestic wools.

Extended offerings of South American pullings have been a feature of the quarter. Chicago packers who have large slaughtering establishments in the Argentine have marketed their wools here, and this output has greatly exceeded the domestic end of their business.

W. A. BLANCHARD.

FOREIGN WOOLS. (MAUGER & AVERY.)

	1917.			1916.
	July.	August.	September.	September.
Australian Combing.*				
Choice				45 @ 48
Good				43 @ 45
Average				39 @ 40
Australian Clothing:				
Choice				*
Good				41 @ 43
Average				36 @ 38
Sydney and Queensland:				
Good Clothing				41 @ 43
Good Combing				43 @ 46
Australian Crossbred:				
Choice				*
Average				*
Australian Lambs:				
Choice				40 @ 42
Good				36 @ 38
Good Defective				33 @ 35
Cape of Good Hope:				
Choice	70 @ 72	70 @ 72	70 @ 72	34 @ 35
Average	60 @ 62	60 @ 62	60 @ 62	25 @ 28
Montevideo:				
Choice	83 @ 85	83 @ 86	83 @ 86	45 @ 49
Average	75 @ 80	75 @ 80	75 @ 80	40 @ 43
Crossbred, Choice				*
English Wools: *				
Sussex Fleece				*
Shropshire Hogs				*
Yorkshire Hogs				*
Irish Selected Fleece				*
Carpet Wools:				
Scotch Highland, White				*
East India, 1st White Joria				*
East India, White Kandahar				*
Donskoi, Washed, White				*
Aleppo, White				*
China Ball, White	60	60	60	35 @ 40
" " No. 1, Open	52 @ 55	52 @ 55	52 @ 55	34 @ 38
" " No. 2, Open	40 @ 45	40 @ 45	40 @ 45	28 @ 32

* There were no Australian or English wools in the market.

Boston, October 5, 1917.

FOREIGN WOOLS.

The quarter under review has shown a limited demand for foreign wools, because of the smallness of supplies in the market.

There has been practically no Australian merino or crossbred wool and very little greasy River Plate crossbred. Capes, both greasy and scoured, have been in fair supply, with a good demand for greasy combings and scoured wools.

Chubut wools have moved freely and supplies are well cleared.

The trade is looking forward to the arrivals of 45,000 bales and 200,000 bales of Australian wool, shipment of which has been permitted to America by the British government, and also 20,000 bales of East India wools, transportation for which is to be provided by the United States government.

MAUGER & AVERY.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS
OF AUGUST 24, 1912.

Of the Bulletin of the National Association of Wool Manufacturers, published quarterly, at 50 State Street, Boston, Mass., for October 1, 1917.

STATE OF MASSACHUSETTS }
COUNTY OF SUFFOLK } ss.

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared Winthrop L. Marvin, who, having been duly sworn according to law, deposes and says that he is the Editor of the Bulletin of the National Association of Wool Manufacturers, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, National Association of Wool Manufacturers, 50 State Street, Boston, Mass.

Editor, WINTHROP L. MARVIN, 50 State Street, Boston, Mass.

Managing Editor, none.

Business Managers, none.

2. That the owners are (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock):

National Association of Wool Manufacturers, 50 State Street, Boston, Mass., the principal officers being: *President*, John P. Wood, Philadelphia, Pa.; *Vice-Presidents*, William M. Wood, Boston, Mass.; Frederic S. Clark, North Billerica, Mass.; George H. Hodgson, Cleveland, O.; *Secretary and Treasurer*, Winthrop L. Marvin, Boston, Mass.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are (If there are none, so state):

There are no bonds, mortgages or securities of any kind.

WINTHROP L. MARVIN.

(Signature of Editor, Publisher, Business Manager, or Owner.)

Sworn to and subscribed before me this 18th day of September, 1917.

JAMES G. HILL,

Notary Public.

(My commission expires March 25, 1921.)

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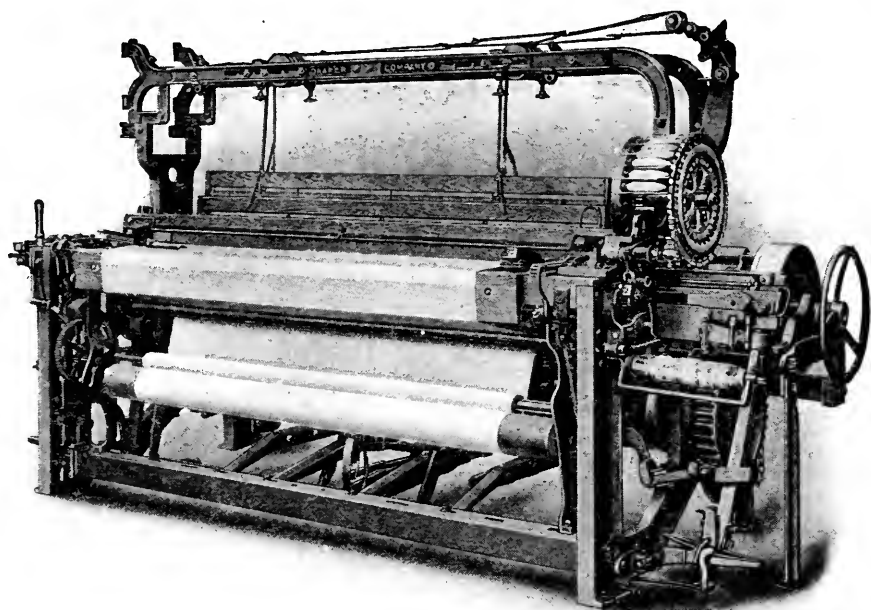
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